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ABSTRACT

This training outline for haulage truck operators, one in a series of eight outlines, is designed primarily for company training foremen or supervisors and for trainers to use as an industry-wide guideline for heavy equipment operator training in open pit mining in British Columbia. Intended as a guide for preparation of lesson plans both for classroom and on-the-job training activities, this outline is divided into eight modules. Each module is based on 1 to 13 objectives. For each objective, key points and procedures are outlined. Module topics are basic safety and operating rules, communications, gauges and controls, pre-start and operational checks, basic truck operation, production operation, service and refuel, and special assignments. A skill profile chart is attached. (YLB)

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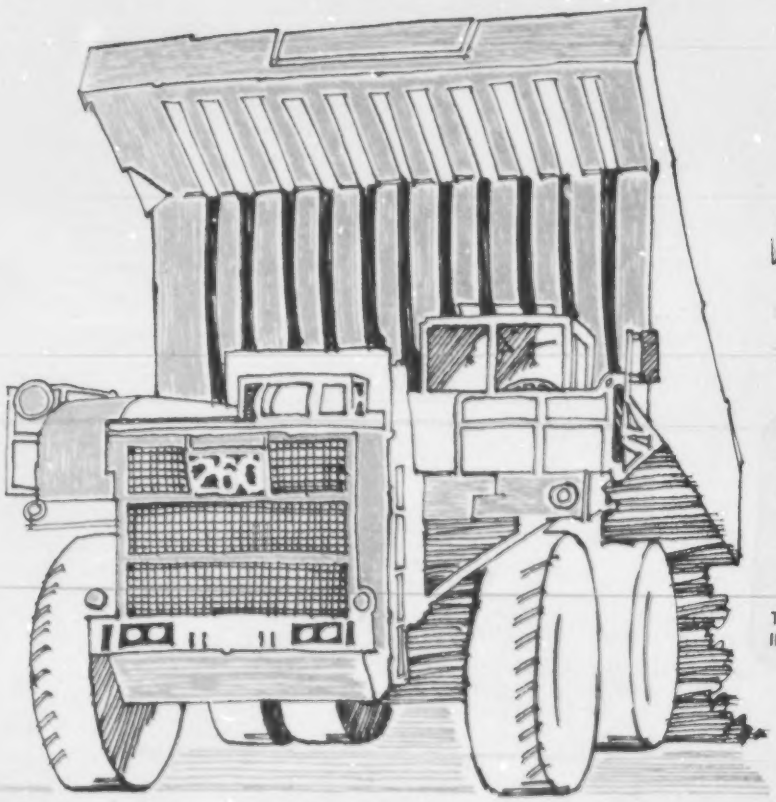
OPEN PIT MINING JOB TRAINING SERIES

HAULAGE TRUCK OPERATOR



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Titles in the Open Pit Mining Job Training Series

- Haulage Truck Operator
- Rubber Tire Dozer Operator
- Track Dozer Operator
- Front End Loader Operator
- Grader Operator
- Rotary Drill Operator
- Shovel Operator
- Heavy Duty Tireman

OPEN PIT MINING
JOB TRAINING SERIES

HAULAGE TRUCK OPERATOR

A joint project
of the
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and
member companies of the
Mining Association of British Columbia

Province of
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INTRODUCTION

The *Open Pit Mining Job Training Series* was developed through the co-operation of member companies of the Mining Association of British Columbia and the Post-Secondary Department of the Ministry of Education. The series was initiated by the education and training committee of the Mining Association. The committee chairman, Les Redford, has given invaluable support throughout the project.

The training outlines in the series are primarily written for company training foremen or supervisors and for trainers to serve as an industry-wide guideline for heavy equipment operator training in open pit mining in British Columbia.

THE DEVELOPMENT PROCESS

DACUM

Each of the training outlines in the series was developed using the DACUM process, a systematic model for developing modular training programs. A series of four booklets describing the DACUM process is available from:

Publication Services Branch,
Ministry of Education,
878 Viewfield Road,
Esquimalt, B.C.
V9A 4V1

Telephone: (604) 387-5331

Project Initiation

The Mining Association's education and training committee gave early direction to the project. Committee members actively working with chairman Les Redford were:

Bill Dement, Craigmont Mines Limited

Glen Martin, Similkameen Division, Newmont Mines Limited

Bill Scribner, Brenda Mines Limited

Tom Nicholson, The Mining Association of British Columbia

Vic Dawson of the Ministry of Energy, Mines and Petroleum Resources also participated with the committee in setting directions.

The first workshop with representatives from the mining industry, the Mining Association, and the Ministry of Education was held in April, 1979. Project goals and priorities were set and an activity plan was established.

DACUM Workshop and Skill Profile Charts

A three day DACUM workshop was held in June 1979. This workshop was conducted by Diane Morrison, a program developer from the Ministry of Education. The following representatives participated in the workshop:

Fred Mason, Afton Mines Limited

Ivan Moser, Afton Mines Limited

Vern Bouck, Bethlehem Copper Corporation

Ray Chenier, Bethlehem Copper Corporation

Bill Scribner, Brenda Mines Limited

Ron Owens, Cyprus Anvil Mining Corporation

Dennis LeDuc, Endako Mines Division, Placer Development Limited

Terry Perrier, Fording Coal Limited

Barry Tripp, Granisle Mine, Noranda Mines Limited

Bill Savilow, B.C. Coal Ltd.

Tom Nicholson, Mining Association of British Columbia

Fred Savage, Ministry of Education

Jack Murray, Noranda Mines Limited

Ed Rudolph, Noranda Mines Limited

Don Rankin, Similkameen Division, Newmont Mines Limited

Don Barker, Zapata Granby Limited

The DACUM workshop produced heavy equipment operator skill profile charts. Each chart listed the essential skills needed by the operator on the job. During the following months, the skill profile charts were circulated to representatives throughout the mining industry for validation.

Training Outlines

Once the skill profile charts were approved, the next step was to write training outlines. For each skill on the charts, one or more objectives were written that state what the trainee must be able to perform at the end of the training program to demonstrate mastering the skill. A trainee who can do all the objectives in the outlines is considered to have the skills required to perform on the job. A training outline developed using this approach is often referred to as a performance or competency-based outline.

Bill Savilow from B.C. Coal Ltd. (formerly Kaiser Resources) was selected to write six training outlines from the skill profile charts. He worked part-time on the outlines while continuing his responsibilities in the training department at B.C. Coal. Bill wrote the *Haulage Truck Operator, Rubber Tire Dozer Operator, Track Dozer Operator, Front-End Loader Operator, Grader Operator* and *Rotary Drill Operator* outlines during 1980 and 1981.

Don McColman of Newmont Mines wrote *Heavy Duty Tireman,* and Larry Hartley of Utah Mines wrote *Shovel Operator.*

Reviewing the Training Outlines

Throughout 1980 and 1981 a series of workshops were held to review the outlines. The workshops were conducted by Diane Morrison and attended by participants from various mining companies. The participants who played an extremely important role in examining and revising the training outlines to reflect training standards required across the industry were:

Hans Geertsema, Afton Mines Limited

Fred Mason, Afton Mines Limited

Bill Savilow, B.C. Coal Ltd.

Vern Bouck, Bethlehem Copper Corporation

Jerry LeBlanc, Bethlehem Copper Corporation

Don Miller, Brenda Mines Limited

Gerry Cooper, Brinco Mining Limited

Richard Schwengler, Equity Silver Mines Limited

Don Fraser, Cyprus Anvil Mining Corporation

Terry Wozniak, Fording Coal Limited

Norm Myhre, Gibraltar Mines Limited

George Sutherland, Highmont Operating Corporation

Fred Savage, Ministry of Education

Don McColman, Newmont Mines Limited

John Graham, Noranda Mines Limited
Charles Heikkila, Noranda Mines Limited
Les Redford, Noranda Mines Limited
Dennis LeDuc, Placer Development Limited
Larry Hartley, Utah Mines Limited

In addition, the following individuals participated in the review workshop for the *Haulage Truck Operator* outline:

Doug Greff, B.C. Coal Ltd.
Bob Leader, B.C. Coal Ltd.
Jackie Peters, B.C. Coal Ltd.
Ray Chenier, Bethlehem Copper Corporation
John Van Damme, Brinco Mining Limited
Graham Hook, Fording Coal Limited
Tom Carter, Ministry of Energy, Mines & Petroleum Resources
Derry Gould, Noranda Mines Limited
Barry Tripp, Noranda Mines Limited
George Nickel, Unit-Rig-Lectra Haul.

Field-testing the Haulage Truck Operator outline

In June 1980 three companies (B.C. Coal Ltd; Noranda Mines Limited, Granisle Mine; Brinco Mining Limited) offered to field-test the new *Haulage Truck Operator* outline for a six month period and report back to the group. During the fall, it was further agreed that the other participating mines in the project would also field-test the outline and would complete a questionnaire. In the winter of 1981 all mines reported that the outline had been used successfully to improve the truck operator training at their mine and some reported making major revisions of their training programs as a result of the outline.

Cover Art

Bruce Kurschenska of B.C. Coal Ltd. supplied the photographs upon which the cover illustrations are based.

USE OF TRAINING OUTLINES

Additions and Mondifications

References are made in the outlines to areas where policies will vary from company to company and it is up to trainers to insert their company policies in these places.

Each training outlines is based on a specific manufacturer and model of equipment, for example the haulage truck is an M-100 Lectra Haul. In order to use the material for a different manufacturer or model, a trainer must review the outline and make necessary modifications. It is anticipated that only the section on gauges and controls will need major changes.

For Lesson Plans

The outlines do not contain lesson plans. Rather the trainer should use the outlines as a guide when preparing lesson plans both for classroom and on-the-job training activities. Trainers are encouraged to expand upon the outlines to suit their own situation.

For Testing

The outline should also be used as a guideline for written, oral, and practical testing. Trainers should ensure that upon completion of training, each trainee can perform every objective listed in the outline. It will take time and experience on-the-job before a trainee becomes a proficient operator. Regular on-the-job monitoring by supervisors and trainers can greatly assist the trainee in developing and maintaining the skills needed to be a heavy equipment operator.

Sample tests for the outlines have been written and are available to trainers from:

Research & Curriculum Development Branch,
Ministry of Education,
7451 Elmbridge Way,
Richmond, B.C.
V6X 1B8

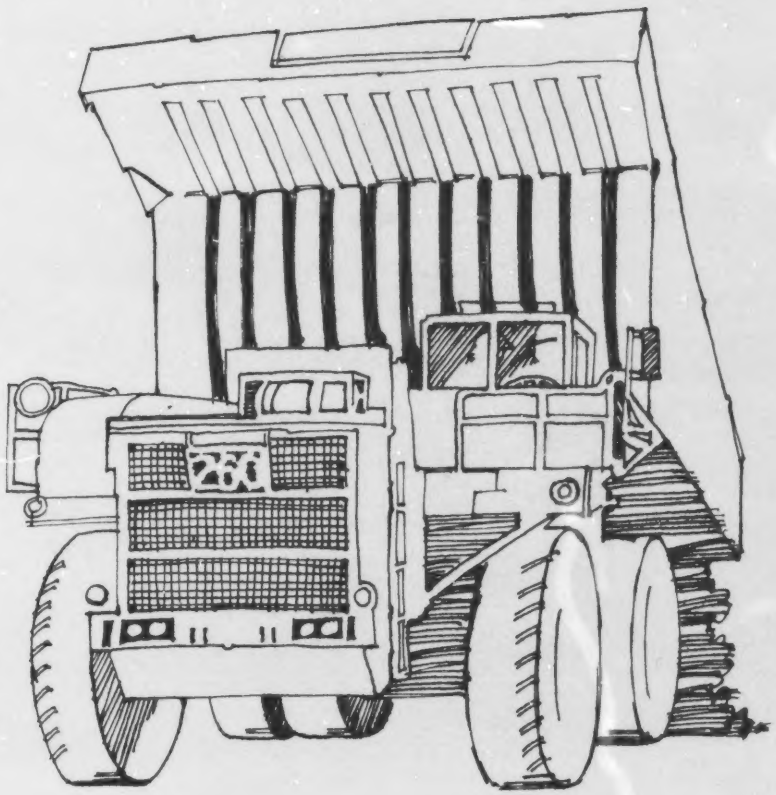
Telephone: (604) 278-3433

For Trainees

The outlines provide valuable information on operating heavy equipment and give clear statements on what trainees must be able to do by the end of their training. Therefore, it is recommended that trainees be given a copy of both the skill profile chart and the outline.

BASIC SAFETY AND OPERATING RULES

module 1



OBJECTIVE 1-1

The operator will explain how safety and equipment operating rules set by the company and by the Mines Regulation Act protect the operator and fellow workers on the mine site.

KEYPOINTS/PROCEDURES

1. Presented here is a basic introduction of safety and equipment operating rules. Individual companies should incorporate their own safety rules into this material.

2. **Personal wear**

   The safety rules concerning personal wear are set for the protection of the truck operator and include proper:

   - Hard hats
   - Footwear
   - Eye protection
   - Hearing protection
   - Gloves

3. **Personal conduct**

   Rules concerning personal conduct are enforced for the safety of all personnel on the mine site and cover:

   - Horseplay
   - Reading on the job
   - Alcohol and drugs

4. **Pre-start check**

   Safety rules pertaining to pre-start checks ensure personal protection while conducting the checks and also ensure that the truck is in a safe operating condition before it is taken from the yard area. Special caution is required when:

   - Working around moving components on the truck such as fans and belts.
   - Bleeding air tanks.
   - Inspecting electrical devices.
   - Removing radiator caps.
   - Climbing on or crawling under the truck.

   It is essential to report immediately any operational problems with brakes, steering, or the dynamic retarder. The truck must always be equipped with a fire extinguisher.

   Rules 263 (d) and 263 (e) of the *Mines Regulation Act* and rules 195 (d) and 195 (e) of the *Coal Mines Regulation Act* state:

   > (d) The driver or operator of any vehicle or mobile equipment shall examine and test his equipment at the beginning of each shift before putting it into use; and if any unsafe condition is noted, such equipment shall not be used and the immediate supervisor shall be notified.
   >
   > (e) For each vehicle or piece of mobile equipment, a logbook or other suitable record shall be maintained, in which shall be entered a record of all unsafe conditions and the repairs made, and all notations shall be signed by the person making the en-

try, and the logbook or records shall be available for inspection at all times.

It is the operator's responsibility to comply with these rules.

5. Operating

Operating rules ensure the safety of the truck operator and of all other persons on the mine site.

Only persons authorized by the company are allowed to operate trucks.

There is a blind area immediately around the truck. Before the truck is moved, inspect this area on foot in the yard or visually in the pit. Rule 264 (a) (iii) of the *Mines Regulation Act* and rule 196 (a) (iii) of the *Coal Mines Regulation Act* state:

> No person shall operate or put in motion any vehicle or mobile equipment unless he has just previously inspected on foot the area over which the equipment is to be moved.

The operator must immediately follow all warning signals given by others on the mine site including horns, lights and hand signals. These signals are covered in OBJECTIVE 2-1.

In addition to external warning signals, the operator must respond appropriately to the truck's warning signals from the gauges and controls. Truck warning signals are covered in OBJECTIVE 3-4.

6. Traffic control scheme

It is the operator's responsiblity to obey the traffic control scheme set out by the company (OBJECTIVE 1-3).

Rules 264 (b) of the *Mines Regulation Act* and 196 (b) of the *Coal Mines Regulation Act* both state:

> The owner, agent, or manager of every mine shall prepare a traffic control scheme for his operation and shall have it accepted by the Inspector, and the scheme shall show the maximum allowable speeds for the vehicles in use, rules for passing, "stop" and "yield" locations, priority rules for various vehicles, rules for night operation, maximum operating grades, emergency run-off protection, and such other information as may be required by the Inspector.

7. Loading

Loading rules ensure a safe and efficient operation at the loading area. The shovel or loader operator is the key person and has direct control of activities in the loading area. For self protection, for the protection of equipment, and for the protection of other persons, the truck operator must:

- Adhere to signals from the shovel or loader operator.
- Stay inside the cab of the truck.
- Stay alert to the movement of other equipment in the area.
- Follow the traffic control scheme in the loading area.
- Exercise care when backing against the muck pile.
- Be alert to possible falling materials such as spillage or loose rock.

- Be alert to possible rough loading by a shovel or loader operator.
- Proceed cautiously if the load is either high or poorly distributed.

8. Hauling

The truck operator is responsible for following safe driving practices at all times:

- Make sure that the way is clear before moving the truck.
- Use the dynamic retarder to control the speed.
- Watch gauges continually while operating.
- Never drive or back over large materials.
- Keep mirrors clean and adjusted.
- Slow down in congested areas.
- Never make turns at high speeds.
- Follow all traffic regulations.
- Avoid contact with electrical cables such as power cables alongside the road, cable stands, and overhead cables.

Caution:

An operator should never travel with the dump body raised because of potential damage to the hoist cylinders and the possibility of a collision with an overhead power cable.

9. Dumping

Dumping rules ensure a safe and efficient operation at the dumping area. The dump supervisor is the key person and has direct control of activities in the dump area. The truck operator should be alert for the following conditions:

- Settling dumps with either cracks or slippage.
- Improper incline to the edge of the dump.
- Improper consistency of the berm (snow and ice; sand or fine grade materials).
- Additional equipment around the dump.
- Excessive traffic in the area.

Rule 272 of the *Mines Regulation Act* and rule 203 of the *Coal Mines Regulation Act* state:

> (a) No material shall be dumped from any vehicle over a bank more than ten feet high unless
>
> (i) there is available an effective ridge of material, or an anchored dump block, to act as a backstop; and
>
> (ii) there is a dump supervisor who shall be responsible for signalling and truck-dumping procedures and for checking and reporting the stability of the dump; but the Inspector may exempt an operation from the requirement of this paragraph where:
>
> (A) the haulage truck capacity is less than forty tons; or
>
> (B) the tonnage being dumped is less than five hundred tons in an eight-hour shift; or

(C) the nature of the material being dumped does not require a dump supervisor; but in no case shall dumping be done from an unsafe bank.

(b) Where a dump supervisor is employed at a dump, no person shall move or dump a truck at the dumpsite unless and until he receives a directional order from the dump supervisor.

Dumping procedures are covered in OBJECTIVES 6-6 and 6-7.

10. Servicing

Servicing rules ensure the safety of all persons in the service area. The truck operator must take the following precautions:

- Never smoke or strike an open light while fuelling.
- Always clear the area of people before moving the truck in or out of the service area.

Servicing procedures are covered in Module 7, "Service and Refuel."

11. Parking

Safe parking procedures are established to provide safety for people working around the vehicle and to prevent trucks from running away. The operator must obey all procedures for leaving the truck:

a. Park on level ground.

b. Turn the wheels into the bank, if possible.

c. Set the maxi-brakes.

d. Set the range selector in neutral.

e. Turn off the engine.

f. Shut off the master switch.

g. Set the wheel chocks.

h. Maintain a safe distance between parked haulage trucks.

Parking is covered in OBJECTIVE 5-7.

OBJECTIVE 1-2

The operator will describe the changing conditions that can occur at the mine site and explain the importance of staying alert to these changes.

KEYPOINTS/PROCEDURES

1. The key to staying alert to the dangers of changing conditions is to drive defensively. The operator should discuss any unsafe condition with the supervisor.

2. **Weather**

   Rain, snow, and fog each have an affect on road and driving conditions. Harsh weather can affect the operator's visibility and can cause slippery conditions. Under poor weather conditions it is recommended that operators reduce speed.

3. **Road conditions**

   Road conditions change with the changing weather, e.g., slippery conditions in cold weather and dusty conditions when it's hot. The operator must be alert for foreign materials on the road such as material that has fallen off another haulage truck, rocks, windrows, metal debris or scrap. Road grades change constantly and an operator should be aware of the grade changes in order to know when to increase or decrease speed.

4. **Other equipment**

   The operator must always be alert to other equipment that may be on the road: dozers, graders, sand trucks, water trucks, light duty vehicles, buses or ambulances.

5. **Speed**

   When hauling a load downgrade, the operator must be alert to any sudden acceleration which may indicate loss of the dynamic retarder.

6. **Traffic control scheme**

   While the truck is being loaded at the working face, the traffic control scheme is constantly changing and the operator must be aware of the changes.

   Usually the traffic control scheme at the dump area and on the haul road changes very little, but the operator should be aware that a change could possibly occur.

7. **Truck performance**

   An alert operator can determine a change in the truck's performance by being familiar with how the truck reacts under common working conditions such as hauling a load. The operator should be able to tell if the truck is losing power.

   Caution:

   One of the most important changes in truck performance is the loss of the dynamic retarder, brakes or steering. If any questionable changes occur within these systems, the truck must be checked out immediately. Do not operate it.

8. **Light**

   The change from daylight to night and vice-versa create driving conditions that demand added attention and alertness. With experience a driver becomes more comfortable driving at these times.

OBJECTIVE 1-3

The operator will describe the mine site's traffic control scheme for the haulage roads, the loading area, and the dump area.

KEYPOINTS/PROCEDURES

1. At all times the operator must follow the company's established traffic control scheme unless directed otherwise by the supervisor.
2. Each mining property designs its own traffic control scheme.
3. **Right of way**

   Due to the size of haulage trucks and their considerable blind spots, they have a high right of way priority as is seen in the following priority list:

   a. Ambulance, rescue or fire trucks

   b. Buses

   c. Loaded production truck

   d. Empty production truck

   e. Explosive truck and fuel truck

   f. All other trucks or equipment

   Cautions:

   A set of right of ways provides guidelines, but all operators must use judgement in all situations. Remember, a right of way can only be given, it cannot be taken.

   Give special attention to graders, especially in the spring and fall when roads are muddy. Since their front and rear ends can swing out very easily, they should be given a wide berth when passed.

4. **Keep right**

   At all times the truck operator must keep to the right unless otherwise directed by the supervisor or by properly posted signs.

5. **Traffic control scheme regarding shovels and loaders**

   It is important not to change the traffic control scheme at the loading face unless advised by the supervisor. Breaking up the traffic control scheme causes confusion and creates potential hazards.

6. **Proper intervals**

   A proper interval must be kept between trucks. The interval will vary depending on the truck speed and the road grade and condition, but it must always provide ample braking distance. As a rule, on roadways the operator should maintain an interval of 200 feet to the truck traveling ahead. On hills or slippery roads this interval should be increased.

7. **Traffic signals**

   Obey all traffic signals and signs including:

   - Lights at the breaker station or crusher
   - Stop signs or yield signs

8. **Changing road systems**

   When road systems change, operators must be forewarned and also advised as to which traffic will have the right of way.

9. **Merging traffic**

   Merging traffic must yield to through traffic unless otherwise informed by the supervisor.

10. **Parking**

    Trucks should be parked at least 20 feet apart. Never park within 50 feet (or the distance the company has established) of the working face. Parking so close that operators can talk or jump from one cab to another is not allowed. Many hazards can result from such a poor practice.

OBJECTIVE 1-4

The operator will explain the importance of proper driving techniques in order to avoid tire damage.

KEYPOINTS/PROCEDURES

1. **Road hazards**

   The operator must constantly be aware of pot holes and foreign objects on the road such as spill rock and metal objects.

2. **At the work face**

   The operator should never back the truck up onto the work face where the shovel or loader may be working because large loose rocks will cause extensive damage to the tires. If you feel the truck is climbing the face, let the truck roll forward onto flat ground.

3. **Starts**

   When starting off with a load or even unloaded, the truck operator should pull out with a gradual increase in speed to avoid spinning the tires because this causes extensive tire damage.

4. **Turns**

   The operator should not turn more sharply than necessary. Tight turns cause twisting and scuffing of rubber from the treads, especially at high speeds. Also, the operator should be aware that sharp turns shift the load to the outside and temporarily overload the tires on that side causing the wheel slip light to come on.

5. **Back up to dump**

   Backing up hard against the berm at the dump or against the stop barrier at the breaker or crusher will cause tire damage.

6. **Excessive braking**

   The operator should be aware that excessive braking at high speeds causes scuffing of the tire tread, and has also been known to cause treads to separate from the tire.

OBJECTIVE 1-5

The operator will explain both normal and emergency braking techniques for stopping the truck.

KEYPOINTS/PROCEDURES

1. **Normal braking**

   Normal braking on the diesel electric haulage truck is governed mainly by the dynamic retarder. The retarder controls the speed of the vehicle. Once the truck speed is reduced by the retarder to 3 mph, the service brakes are applied to stop the truck.

2. **Emergency braking**

   Emergency braking means bringing the truck to a complete stop as quickly as possible.

   The operator must apply the dynamic retarder and the service brakes fully until the truck stops. It is important to press as hard as possible on both pedals.

3. **Retarder failure**

   One of the most common braking emergencies is the failure of the retarder on the dynamic retarding system causing the truck to runaway. In this situation pressing the service brakes as hard as possible will safely bring the truck to a complete stop.

   In a braking emergency, it is also important to depress the emergency master breaker override switch which provides a method of by-passing the truck's master (circuit) breaker. Pressing this switch provides 24 volts of direct current to the vehicle's control circuits in the event that the master breaker opens.

4. **Service brake failure**

   Failure within the service brake circuits, e.g., the loss of a line between the treadle valve and relay or relay emergency valves, make it necessary for the operator to use the hand brake or the maxi-brakes to bring the truck to a stop.

OBJECTIVE 1-6

The operator will explain the procedures for using the emergency steering system on the truck.

KEYPOINTS/PROCEDURES

1. **Emergency steering system**

   Emergency steering system procedures:

   a. Bring the truck to a complete stop by applying the dynamic retarder pedal and service brake pedal at the same time. Do this as quickly as possible.

   b. While the truck is coming to a stop, press the auxiliary steering pump switch which activates the auxiliary steering pump. This pump operates on 24 volts D.C. supplied directly by the truck batteries. The purpose of the pump is to supply hydraulic pressure to the steering system should the main system pressure be lost.

   c. Leave the switch on until the truck comes to a complete stop.

   d. Use caution in turning because the wheels cannot be turned as quickly when powered by the auxiliary steering pump.

   e. When the truck is stopped, turn off the switch. This is very important because leaving the auxiliary steering motor running will cause permanent damage to the motor.

OBJECTIVE 1-7

The operator will explain the procedures for shutting down the truck and the engine in an emergency.

KEYPOINTS/PROCEDURES

1. **Emergency procedures for shutting down the truck and engine**
   a. Park on the most level area possible.
   b. When parking alongside a bank, turn the wheels into the bank. (This is a general precaution that you should take whenever possible.)
   c. Set the hand brakes.
   d. Set the maxi-brakes.
   e. Pull the emergency engine shut-off immediately and at the same time hit the engine kill switch to ensure that the engine will stop.
   f. Once the engine has stopped, shut off the master switch.
   g. Set the wheel chocks in place following the proper procedures.

OBJECTIVE 1-8

The operator will explain why it is important to maintain good housekeeping practices.

KEYPOINTS/PROCEDURES

1. **Good Housekeeping**

   The importance of good housekeeping is to maintain a safe and pleasant environment to work in. Employees have the responsibility to keep their own work area in good condition. Good housekeeping is an essential part of each employee's job. A disorderly and dirty work area can cause accidents, personal injuries and low morale. Good housekeeping on a truck is essential for safety and includes the following:

   - Keep all windows and mirrors clean for good visibility.
   - Keep the dash clean, primarily the gauges, so that they can be accurately read.
   - Keep the floor of the cab clean. This is important because paper, rags, dirt, mud, etc., could get under the controls (e.g., the brake or retarder pedals) causing them to malfunction. An accident could result.

OBJECTIVE 1-9

The operator will explain the mine site blasting and guarding procedures.

KEYPOINTS/PROCEDURES

1. The blasting procedure is enacted on the day of the blast. Notification is given to the employees so they are aware of the blast. This notification, however, is not the final precaution. Before blasting, the supervisor makes a careful physical check of the area to ensure that no one is there. All employees are evacuated to a safe distance. Once the area has been evacuated, all access roads are closely guarded to prevent access into the blast area.
2. The guards have the authority to stop anyone from entering the blast area. The guards will be visibly identifiable by a coloured vest issued by supervision. They will remain at the location designated by supervision until relieved by the general foreman or by the person who designated them as guards.
3. Should any irregularities occur, it is the guard's responsibility to immediately notify the blasting foreman of the problem.

OBJECTIVE 1-10

Given a map of the pit area layout, the operator will give the proper names of pits and haul roads and will locate the dump areas by name or number. The dump areas will include waste dumps, stockpiles and breaker station or crusher station locations.

KEYPOINTS/PROCEDURES

1. Each property is different in layout, in names and numbers of dumps, pits, etc.
2. Besides knowing the basic layout of the pit area, some properties may also want employees to know the shovel locations.

OBJECTIVE 1-11

The operator will explain the importance of reporting accidents and injuries.

KEYPOINTS/PROCEDURES

1. **Accidents**

   All accidents must be reported to your supervisor as soon as possible. In the event of a serious accident, do not disturb the accident scene unless there is a risk of further damage or a danger to personnel.

2. **Injuries**

   All injuries, no matter how slight, must be reported to your supervisor and to the first aid station. Any injury where the skin is broken must be treated to avoid infection. In cases of serious injury, do not move the victim: send for the first aid attendant.

3. **Investigations**

   Reporting accidents and injuries makes way for an investigation to be carried out to determine the cause. These investigations often lead to new rules or procedures that create a safer working environment for all employees.

   Note:

   It is the responsibility of all employees to report any hazardous act or condition to their supervisors immediately.

OBJECTIVE 1-12

The operator will explain the company's power cable handling policy.

KEYPOINTS/PROCEDURES

1. A power cable handling policy should be established by each company and should be followed by all personnel handling power cable. This policy should include the following precautions:
   a. Use 10,000 volt hot gloves or other approved protective devices at all times when handling power cable. Do not step on power cable or allow power cable to come into contact with any part of the body.
   b. Inspect gloves before use and discard them if defective. Hot gloves must be covered with "leathers". Do not use hot gloves if they are wet inside.
   c. Do not use hot gloves for any purpose other than handling power cable.
   d. Treat all power cable attached to sub-stations or switch houses as energized.
   e. Never place any part of the body, even if protected by hot gloves, on or near cable terminals located inside potheads and junction boxes.
   f. No one other than an authorized person is to energize, de-energize, connect or disconnect power cables.
   g. Treat cable arches the same as power cable when the cable over the arch is connected to a sub-station or switch house.
   h. Report any cuts or bruises in the cable. Do not handle damaged power cable unless it has been checked by an authorized person. Only qualified electricians can make repairs to power cables.
   i. Never run over unprotected power cable with any vehicle or piece of equipment.
   j. Never pull more than 75 feet of power cable in any single pull. Power cables can be damaged by stretching.
   k. When removing junction boxes and potheads, support them adequately and keep them clear of the pit floor. Rough handling of junction boxes can cause damage to the boxes or to the power cable by the flexing of the cables at the boxes.
   l. Disconnected cable retains a residual charge (about 110 volts), so use caution even with disconnected cable.
   m. Padlock the input side (hot side) of a pothead-type switch house so that it cannot be inadvertently removed.

OBJECTIVE 1-13

The operator will explain the company's lock-out procedure.

KEYPOINTS/PROCEDURES

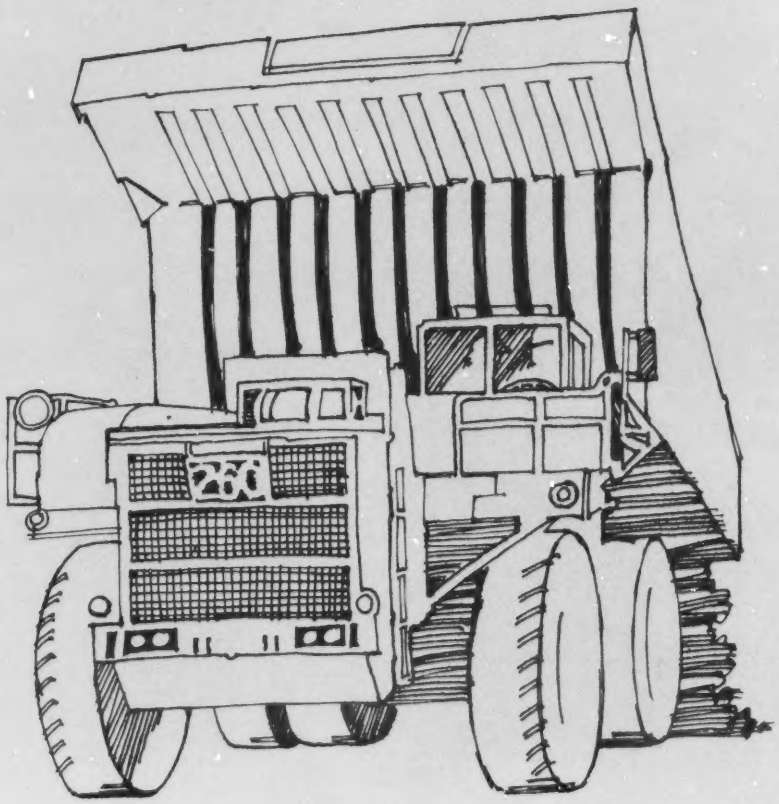
1. To ensure the safety of both maintenance and operating personnel, a procedure for locking-out equipment should be established by the company and followed by all personnel.

2. Locking-out equipment means basically that wherever the possibility exists of the equipment starting, energizing, or moving, a possibility that could create a hazardous situation, that piece of equipment should be locked-out and tagged by the people working on it. A lock-out procedure is designed to prevent accidents and personal injury. Never remove another worker's padlock or tag without authorization. Check with your supervisor for instructions.

3. The operator is required to know the location of the lock-out station for the equipment, and must always check this station for padlocks or do-not-operate tags before attempting to start the shovel.

COMMUNICATIONS

module 2



OBJECTIVE 2-1

The operator will:

a. **Describe the signals used by truck, shovel, and loader operators.**

b. **Describe the traffic light system for the control of dumping at the breaker station, grizzly, or crusher.**

c. **Demonstrate the hand signals that a dump supervisor gives.**

KEYPOINTS/PROCEDURES

1. A signal for HELP WANTED should be established at the property and all the employees informed of it.

2. **Truck operator's signals**

   A truck operator is required to give these horn signals:

   - Start engine — one blast
   - Stop — one blast
   - Go ahead — two blasts
   - Back up — three blasts

   All trucks should be equipped with automatic back up horns.

3. **Shovel operator's or loader operator's signals**

   A shovel or loader operator uses the following horn signals when loading a truck.

   - Stop — one blast
   - Go ahead — two blasts
   - Back up — three blasts
   - Reposition or tail load — four blasts

4. **Lights at the breaker station, grizzly, and crusher**

   Red and green traffic lights control dumping at the breaker station, grizzly and crusher:

   - Red — do not dump
   - Green — all clear to dump

5. **Dump supervisor's hand signals**

   - Back-up — The dump supervisor rotates the right arm in a circular motion clockwise to signal the truck back towards the berm.
   - Stop — Once the truck has reached the desired place at the berm, the dump supervisor signals a stop by moving the right arm up and down.
   - Dump — When the truck is stopped in the position designated by the dump supervisor, the supervisor signals to dump by holding the right arm straight up in the air.
   - Move out — Once the truck has dumped its load over the berm, the dump supervisor points to the truck that is to move out. The supervisor then points in the direction of the shovel that the truck came from.

   Caution:

   Never move the truck until the dump body is completely down and the dump supervisor signals the truck to move out.

OBJECTIVE 2-2

Given a sample of the reporting forms used by the company, the operator will complete production reports, time cards, and the daily logbook.

KEYPOINTS/PROCEDURES

1. **Production reports**

   The production reports are filled out to include the:

   - Area code number of the pit in which the operator is working.
   - Equipment numbers of the loader or shovel loading the truck.
   - Dumping numbers of the location where the material is being handled, e.g., stockpiles, waste dumps, or the breaker station or crusher.
   - Equipment numbers of the truck that the operator is using.
   - Numbers of the material being hauled (material hauled numbers) such as waste, overburden, ore, or coal.

2. Production reports are used for costing and planning purposes and therefore it is imperative that they be accurate.

3. **Timecards**

   Timecards should include the:

   - Area code number of the pit in which the operator is working.
   - Equipment numbers of the loader or shovel loading the truck.
   - Dumping numbers of the location where the material is being dumped, e.g., stockpiles, waste dumps, breaker station, or the grizzly or crusher.
   - Equipment numbers of the truck that the operator is using.
   - Material hauled numbers for material such as waste, overburden, ore (low grade, high grade), coal (oxidized, metallurgical).

4. **Daily logbooks**

   The daily logbooks are filled out regularly and cover the following information:

   - General repairs to the truck.
   - Fuel up times so that the oncoming operator knows approximately how much fuel is left.
   - Any general information, for example on steering and brakes, which may help the oncoming operator.

   Rule 263 (e) of the *Mines Regulation Act* and Rule 195 (e) of the *Coal Mines Regulation Act* state:

   > For each vehicle or piece of mobile equipment, a logbook or other suitable record shall be maintained, in which shall be entered a record of all unsafe conditions and the repairs made, and all notations shall be signed by the person making the entry, and the logbook or records shall be available for inspection at all times.

5. It is important that the oncoming operator knows the prior shift's history of the truck. Operators should report unsafe or hazardous equipment first of all to the supervisor and then to the oncoming operator.

OBJECTIVE 2-3

The operator will operate the mobile radio on the mine site and explain proper procedures for its use.

KEYPOINTS/PROCEDURES

1. **Radio procedures**

   Proper and effective use of the radio is important. Take the following steps:

   a. Identify the sender by the unit or vehicle number.

   b. Identify the receiver by the unit or vehicle number.

   c. Wait until the receiver acknowledges.

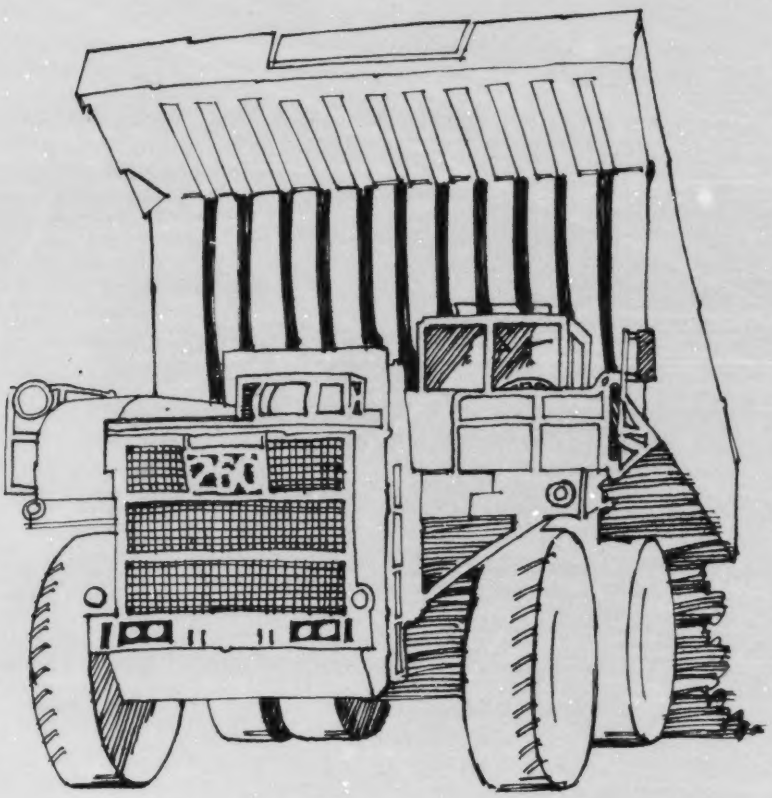
   d. Relay the message in a clear and precise manner.

2. Radio use is restricted to necessary operational transmissions. Use no profane language over the radio at any time.

3. In the event of an unsafe situation or an emergency, contact the dispatcher or supervisor immediately. If radio silence is necessary, either the dispatcher or the immediate supervisor can call for it. This will depend on procedures established at the mine.

GAUGES AND CONTROLS

module 3



OBJECTIVES 3-1

The operator will locate and identify each of the gauges on the truck dashboard and each control and switch in the cab.

KEYPOINTS/PROCEDURES

1. **Gauges on the truck dashboard:**
   - Engine oil pressure gauge
   - Engine temperature gauge
   - Air pressure gauge
   - Tachometer
   - Speedometer
   - Ammeter
   - Voltage gauge
   - Air filter indicator
   - Fuel gauge

2. **Switches and controls in the truck cab area:**
   - Steering wheel
   - Range selector lever
   - Accelerator pedal
   - Retarder pedal
   - Service brake pedal
   - Hand brake lever
   - Hoist lever
   - Emergency master breaker override button
   - Starter lock-out button
   - Engine kill switch
   - Air start button
   - Windshield wiper button
   - Front wheel brake control
   - Electrical reset buttons
   - Maxi-brake control switch
   - High and low idle switch
   - Auxiliary steering switch
   - Headlights, backup lights, tail and panel light switch
   - Dimmer switch
   - Master switch
   - Low air warning device (wig wag)
   - Ground relay light
   - Wheel slip indicator

- Engine emergency shut down
- High beam indicator
- Panel light dimmer control
- Auxiliary steering light
- Aftercooler heater indicator
- Heater switch
- Defroster
- Parking brake indicator

OBJECTIVE 3-2

The operator will describe the function and normal range of gauge and state the components that each gauge monitors or is directly related to.

KEYPOINTS/PROCEDURES

1. Abnormal and unacceptable gauge readings are covered in OBJECTIVE 3-4.

2. **Engine oil pressure gauge**

   The function of the engine oil pressure gauge is to monitor engine oil pressure while the engine is running. The operator should refer to the engine manufacturer's recommended oil pressure ranges for both operating and idling with the following engines:

   - Cummins diesel
   - Detroit diesel (GMC)
   - Cat engines

   Normal oil pressure during haulage is 60-70 psi.

3. **Engine temperature gauge**

   The function of the engine temperature gauge is to monitor the engine coolant temperature while the engine is in operation. The engine temperature gauge is directly related to the engine, engine coolant, and the radiator.

   The acceptable gauge readings of the coolant are:

   - Low coolant temperature 140°F
   - High coolant temperature 200°F
   - Operating range 170-190°F

   The actual temperatures vary with the thermostat settings.

4. **Control air pressure gauges**

   The function of the control air pressure gauges is to monitor air pressure in the service brake, air lines, air tanks and air assisted controls (e.g., the retarder, acceleration, and service brake pedals).

   The acceptable air pressure gauge readings are:

   - Minimum air pressure 100 psi
   - Maximum air pressure 120 psi

5. **Tachometer**

   The function of the tachometer is to monitor engine rpms. The acceptable tachometer readings are:

   - Low idle 650 rpm (will vary with that type of engine)
   - High idle. When the range selector lever is put into the forward position, the engine goes into high idle automatically at 1400 rpm.
   - Maximum engine speed 2100 rpm

6. **Speedometer**

The function of the speedometer gauge is to monitor the speed of the truck. The speedometer is directly related to the wheel motors where the speedometer unit is mounted.

The acceptable speedometer readings for the truck are:

- Level haul maximum 25 mph
- Downhill haul maximum 15 mph

Proper speed control using the retarder or dynamic braking is covered in OBJECTIVE 6-3.

7. **Ammeter gauge**

The function of the ammeter gauge is to monitor if the storage batteries are being charged. A positive reading is normal. The ammeter gauge is directly related to the alternator and storage batteries.

8. **Voltage gauge**

The function of the voltage gauge is to monitor the charging voltage to the 24 volt battery. The voltage gauge is directly related to the alternator system and the storage batteries. Normal voltage is 24-28 volts when the engine is at normal operating speed.

Note:

Low battery voltage may cause improper operation of the truck's traction drive system because of lost propulsion or lost dynamic retarding.

9. **Air cleaner indicators**

The function of the air cleaner indicators is to point out the service requirements of the air cleaner element. The air cleaner indicators are directly related to the air filters and the engine. For normal operating the green band shows.

10. **Fuel gauge**

The function of the fuel gauge is to indicate the relative levels of fuel in the fuel tanks. The fuel gauge is directly related to the fuel tanks and the engine.

OBJECTIVE 3-3

The operator will describe the function of controls and switches and state the components that each control or switch is directly related to.

KEYPOINTS/PROCEDURES

1. **Steering wheel**

   The function of the steering wheel is to control the truck's selected direction of travel. The steering wheel is directly related to the steering system components: the hydraulic steering cylinder, tie rods, ball joints, and front wheel assemblies.

2. **Range selector lever**

   The function of the range selector lever is to select the direction of travel, either forward or reverse. The range selector lever is directly related to the main generator, wheel motors, and engine.

3. **Accelerator pedal**

   The function of the accelerator pedal is to control the increase in speed of the truck in either forward or reverse. The accelerator pedal is directly related to the engine.

4. **Dynamic retarder pedal**

   The function of the dynamic retarder pedal is to control the speed of the truck when it is travelling over 3 mph by means of an electrical braking system. The dynamic retarder pedal is directly related to the engine, main generator, wheel motors, excitor, and storage batteries.

5. **Service brake pedal**

   The function of the service brake pedal is to activate the service brakes. This pedal is only to be used under 3 mph. The service brake pedal is directly related to the air lines, brake actuators, brake shoes, brake calipers and brake discs.

   Braking procedures are covered in OBJECTIVE 1-5.

6. **Hand brake lever**

   The function of the hand brake lever is to apply the hydraulic brakes for short time parking during truck loading or dumping operations. The hand brake lever is directly related to air lines, brake actuators, brake shoes, brake calipers, and brake discs. When the truck is left unattended, set the maxi-brake and put the wheel chocks in place.

   Caution:

   Using both the hand brake and maxi-brake at the same time compounds the braking pressure to the rear wheels and puts excessive stress on the rear braking components.

7. **Hoist lever**

   The function of the hoist lever is to raise or lower the dump truck body. The hoist lever is directly related to the hydraulic pump, hoist rams, and dump body.

8. **Emergency master breaker override switch**

   The function of the emergency master breaker override switch is to enable the operator to by-pass the truck's master circuit breaker. This emergency switch is directly related to the master switch and the 24 volt DC system. By depressing the button and keeping it depressed the operator provides 24 volts DC to the vehicle's control circuit in the event that the master circuit breaker opens.

   Caution:

   To prevent excessive damage to the truck, the master breaker override should only be used long enough to bring the truck to a controlled stop.

9. **Starter lock out button**

   The function of the starter lock out button is to lock out the starting system of the truck. The starter lock out button is directly related to the air start motor, switches, electrical components, and the engine.

10. **Engine kill switch**

    The function of the engine kill switch is to stop the engine once the truck has been brought to a complete stop.

11. **Air start button**

    The function of the air start button is to control the air to the engine starter. The air start button is directly related to the air start motor, the main engine of the truck, the air lines, and the air tank.

12. **Windshield wiper button**

    The function of the windshield wiper button is to control the movement of the windshield wipers. The windshield wiper button is directly related to the windshield and windshield wiper blades.

13. **Front wheel brake control**

    The function of the front wheel brake control is to provide the operator with a means of varying the braking pressure to the front brakes when compensating for various road conditions. The front wheel brake control is directly related to the front wheel service brakes, air lines, and brake shoes.

14. **Electrical reset buttons**

    The function of the electrical reset buttons is to reactivate the service lighting systems that have kicked out. Electrical reset buttons are directly related to the service light system, dash lights, head lights, and tail lights.

15. **Maxi-brake control**

    The function of the maxi-brake or spring brake control is to apply the truck's parking brakes and also to apply the vehicle's spring brakes in the event that normal system pressure is lost. The maxi-brake control switch is directly related to the spring-over-hydraulic braking system.

16. **High and low idle switch**

    The function of the high and low idle switch is to enable the operator to select between high idle for normal operation and low idle for the shop area or for close manoeuvering. The high and low idle switch is directly related to engine rpms through an electrical system.

17. Auxiliary steering switch

The function of the auxiliary steering switch is to supply emergency pressure for steering control in the event that the main hydraulic pressure is lost. The auxiliary steering switch is directly related to the auxiliary steering pump, electric motor, steering components, tie rods, and drag links.

18. Headlight, backup light, tail and panel light switches

The function of the light switches is to turn on the headlights, backup lights, tail and panel lights. These switches are directly related to the electrical systems operating the various lights.

19. Dimmer switch

The function of the dimmer switch is to control the operation of the high and low beam headlights. The dimmer switch is directly related to the headlight's electrical circuit.

20. Master switch

The function of the master switch is to apply 24 volts DC to the vehicle's control system, excluding the headlights and emergency steering. The master switch is directly related to the 24 volt DC system and the vehicle's control systems. Note that this is the only switch located outside the cab. It is mounted over the windshield outside the cab.

21. Low air warning device (Wig Wag)

The function of the low air warning device (wig wag) is to warn the operator that there is a low air condition in the truck. The low air warning device is directly related to the air system which includes the air lines, air compressor, air reserve tanks, as well as all of the braking components. Do not operate the truck with the wig wag down; have the truck checked out immediately.

22. Ground relay light

The function of the ground relay light is to indicate a malfunction in the truck's electrical propulsion system. This light is directly related to the electrical system of the truck, and to the propulsion and retarding systems. Should the light indicate a malfunction the truck will lose propulsion and possibly dynamic retarding. Do not use the truck in this condition; have it checked out immediately.

23. Wheel slip indicator lights

The function of the wheel slip indicator lights is to point out a difference in speed between the two wheel motors. The wheel slip indicators are directly related to the wheel motors. Note that the indicators may flash when making a tight turn; this is normal.

24. Engine emergency shut down switch

The function of the engine emergency shut down switch is to provide a sure method of immediately stopping the engine in an emergency. Use this switch only when the truck is at a complete stop.

25. High beam indicator

The function of the high beam indicator is to tell when the truck's high beam headlights are on. The high beam indicator is directly related to the headlights and the dash.

26. Panel light dimmer control

The function of the dimmer control is to control the brightness of the lights on the dash.

27. Auxiliary steering light

The function of the auxiliary steering light is to indicate that the auxiliary steering system is activated and the pump is operating. The steering light is directly related to the steering system, storage batteries, and auxiliary steering pump.

28. Aftercooler heater indicator

The function of the aftercooler heater indicator is to monitor the operation of the heater in the aftercooler drain. This indicator is directly related to the cab heater and the aftercooler heater.

29. Heater switch

The function of the heater switch is to activate or deactivate the heater that warms the operator's cab. The heater switch is related directly to the cab heating system and the air aftercooler.

30. Defroster switch

The function of the defroster is to control the heat going onto the windshield of the cab. The defrost switch is directly related to the windshield defrost system.

31. Parking brake indicator

The function of the parking brake indicator is to tell if the parking brake is on or not. This indicator is directly related to the service brake system and the parking brake control.

OBJECTIVE 3-4

The operator will describe warning signals and explain the action to take for each signal.

KEYPOINTS/PROCEDURES

1. **Alarm bells**

   The alarm bells sound if the engine develops low oil pressure or the engine overheats. If the alarm bells ring, the operator should stop the truck immediately, shut down the engine to avoid further damage, and report the problem.

   The operator should check the engine oil and coolant levels and if they are low check for oil and coolant leaks.

2. **Low air pressure flags**

   The low air pressure warning flag will drop in front of the windshield when the air pressure drops below 90 psi. If the low air pressure flag drops, the operator should bring the truck to a safe stop and secure the truck with the parking brakes, maxi-brakes and wheel chocks. The operator should report the problem and check for air leaks.

3. **Dump body position indicator**

   The dump body position indicator is a piece of hose or pipe attached to the dump body canopy in such a way that when the dump body is down the indicator is visible through the windshield. Do not operate the truck with the dump body raised because of the possibility of hitting overhead power cables and also because of the damage that may occur to the hoist cylinders.

4. **Ground relay light**

   The ground relay light comes on when a ground or short circuit occurs in the electrical propulsion system. Do not operate the truck if the ground relay light comes on or flashes; pull the truck over and park it safely, shut down the engine, and report the problem.

5. **Oil pressure gauge**

   If the oil pressure is below the acceptable reading (OBJECTIVE 3-2), pull the truck over, park it in a safe place, and secure it. Once this is done shut down the engine, check the oil level in the engine, and look for oil leaks. Report the problem immediately.

6. **Engine temperature gauge**

   When the coolant temperature is high the operator should:

   a. First check the coolant level exercising caution, as the coolant is under pressure and severe burns could result from negligence.

   b. Check the engine oil level because low engine oil will cause overheating.

   c. Check to see if the shutters on the radiator are staying closed. By not opening, they will cause overheating.

   d. Look for coolant or oil leaks.

7. **Ammeter gauge**

   The ammeter gauge indicates if the batteries are being charged. Positive readings are normal. If the charge becomes negative, shut down the truck engine immediately and report the problem. The only check the operator can make is to check the alternator belts.

8. **Voltage gauge**

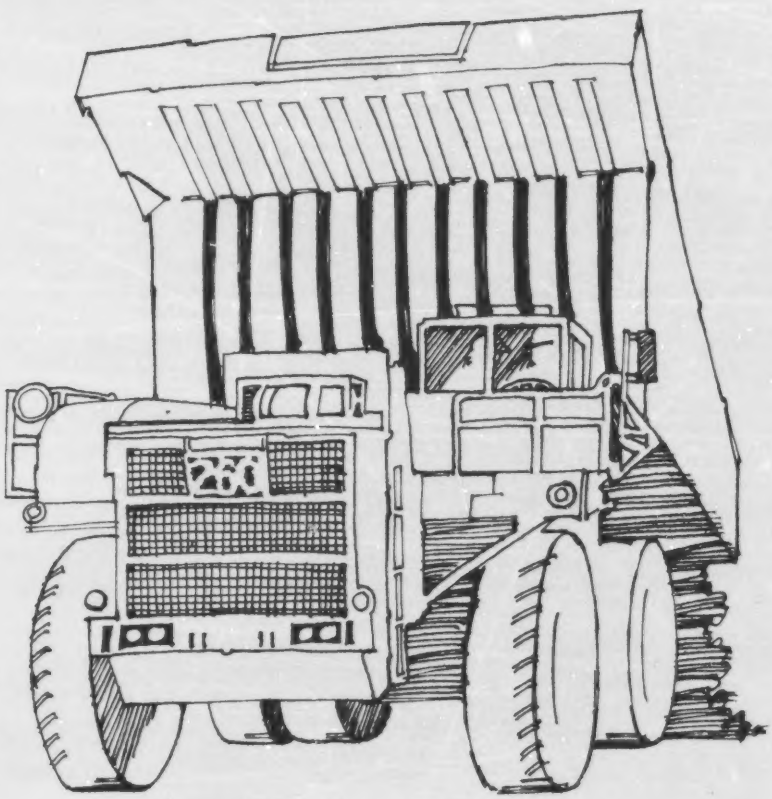
   If for some reason the gauge drops below 24 volts, do not operate the truck. Operating below 24 volts can damage the propulsion and dynamic retarder systems.

9. **Air cleaner indicator**

   If the red band shows, have the filter or element cleaned or changed as soon as possible.

PRE-START AND OPERATIONAL CHECKS

module 4



OBJECTIVE 4-1

The operator will locate and identify the basic units of the truck and their components.

KEYPOINTS/PROCEDURES

1. **Main frame**

   The main frame is the basic unit to which all other units and components are mounted.

2. **Running gear**

   The running gear unit consists of the:

   - Wheel motors
   - Tires
   - Axle box
   - Nose cone
   - Rear suspension
   - Front suspension
   - Steering assembly

3. **Super structure**

   The super structure unit is attached to the main frame and is the base or support for the:

   - Operator's cab
   - Air cleaners
   - Electrical cabinets
   - Dynamic retarding grids

4. **Engine**

   The engine unit consists of the:

   - Radiator assembly
   - Air cleaners
   - Alternator
   - Air start motor
   - Blower motor
   - Main generator

5. **Dump body**

   The dump body unit is attached to the main frame.

OBJECTIVE 4-2

The operator will locate in a systematic sequence the pre-start and running check points on the truck.

KEYPOINTS/PROCEDURES

1. The truck pre-start and running check points are:
   - The cab area for the off-going operator and around the truck for other persons.
   - Engine oil check
   - Engine oil leaks
   - Fan belt
   - Alternator belt
   - Blower belt
   - Excitor belt
   - Front suspension
   - Front tires
   - Front wheel lugs
   - Brake lines
   - Air tanks (main tank, front brake application tanks, back brake application tanks)
   - Hoist rams
   - Main frame
   - Nose cone
   - Hydraulic pump U-joints
   - Rear wheel motor covers
   - Rear brakes
   - Rear tires
   - Rear wheel lugs
   - Rock strippers
   - Rear suspension
   - Square roller
   - Rear axle box door
   - Dump body
   - Steering assembly (tie rods, ball joints, hydraulic cylinders, drag link, bell crank)
   - Radiator coolant level
   - Hydraulic oil level
   - Air intake
   - Auxiliary steering
   - Air cleaner indicators

- Hydraulic hose leaks
- Lights (headlights, backup lights, clearance lights)
- Glass (windshield, side windows, mirrors)
- Handrails and ladder
- Wheel chocks
- Seat belts
- Fire extinguisher
- Dump body supports
- Material in the dump body

OBJECTIVE 4-3

The operator will perform a pre-start check of the truck and describe both the acceptable conditions for each check point and the problems that should be reported to a supervisor.

KEYPOINTS/PROCEDURES

1. **Check for personnel in the cab area and around the truck**

   The operator, before commencing pre-start checks, must check the cab area for other operators and also check for people who may be working around the truck. The operator should walk completely around the truck looking underneath the truck and in the engine compartment and cab. Once this is done the detailed check of the truck can begin.

2. **Engine oil check**

   Check the engine oil level at the beginning of the shift with the truck on level ground. A GM engine (Detroit diesel) should be shut down for at least five minutes before the oil is checked. Cummins and Cat engines may be checked with the engine either running or stopped.

   Cummins and Cat engines have a dipstick with readings on both sides, one side for the engine running and the other side for the engine stopped. It is important to read the appropriate side.

   If the engine oil level is found to be on the add mark or below, notify the supervisor. Do not operate the truck until the oil level is brought up to an adequate level.

3. **Engine oil leaks**

   The operator should look for engine oil leaks while making the engine oil level check. There may be oil lines or gaskets that are leaking. Make a visual check to see if oil is dripping or running down the side of the engine block when the engine is running.

4. **Fan belts**

   The operator should check that the belts are in place, tight, and in good condition.

5. **Alternator belt**

   The operator should check that the alternator belt is in place, tight, and in good condition.

6. **Blower belt**

   The operator should check that the blower belt is in place, tight, and in good condition.

7. **Excitor belts**

   The operator should check that the excitor belts are in place, tight, and in good condition.

8. **Front suspension**

   The operator should check the front suspension for bottoming out and also check that the U-bolt at the top of the front suspension is tight and in place. Check too that the main mounting bolts are tight and in place.

9. **Front tires**

The operator should conduct the following checks on the front tires:

- Visually check the tires for deep cuts, separations and embedded rocks.
- Check for tire bulges at the road surface indicating low air pressure.
- Check the rims for cracks and breaks.
- Check the valve stems for wear and cuts.

Caution:

It is especially important that front tires be in good condition because steering is dependent on them.

10. **Front wheel lugs**

The operator should check the front wheel lugs each day. The wheel lugs hold the tire and rim onto the truck. Give each lug a twist and report any loose ones.

11. **Brake lines**

The operator should visually check the brake lines for leaks. Report any leaks to maintenance for repair as soon as possible. Do not operate a truck with brake line leaks.

Caution:

Check the brake lines on all wheels.

12. **Air tanks**

Check the following air tanks:

a. Main Air Tank — The main air tank is located between the main frame members just above and ahead of the axle box. Drain this tank twice a shift during the winter months. Take caution when draining air tanks because of the sludge and water that comes out. The tanks should be drained until clean air is visible.

b. Front Air Application Tanks — The front air application tanks are located on the bottom side of the deck. Usually one tank is on each side. The operator should drain the tanks twice a shift in the winter months.

c. Rear Air Application Tank — The rear air application tank is located inside the axle box and the drain is located on the front side of the axle box. The operator will have to walk around the front of the right rear tires to find the axle box between the tires and the main frame. Drain this tank twice a shift during the winter months.

13. **Hoist rams**

The operator should visually check the hoist rams to ensure that the hoist anchor pins and keepers are in place. Also check the condition of the hydraulic hose and look for leaks. Report any problems to the supervisor.

14. **Main frame**

The operator should visually check the main frame for cracks and report any problems to the supervisor.

15. Nose cone

The operator should visually check that the nose cone bolts are in place and are tight and that the pins and keeper are in place. The nose cone is located at the pivot point of the frame at the rear axle box. The operator should also check for cracks in this area.

16. Hydraulic pump U-joints

While checking the nose cone, the operator should also check the hydraulic pump U-joints. Shake the U-joint by hand; if excessive movement is found have the joint checked by maintenance.

17. Rear wheel motor covers

To check the rear wheel motor covers:

a. Check that the rear wheel motor covers are in place and in the right position.

b. The wheel covers are situated in the center of the rear wheel. On the back side of the motor cover there is a baffle or trough to catch any mud or water that enters through the air holes in the cover. Check that this baffle is horizontal and tight; if it isn't it will not serve its function and may permit water and mud to enter the motor causing extensive damage.

c. Check that the air passages in the motor cover are open so that air comes out of the wheel from the blower. The air is necessary to cool the electric motors. This check must be made when the truck is running. If the truck is not running during the pre-start checks, the operator must return to make the air passage check after starting the engine.

18. Rear brakes

The operator should remove the rear wheel motor covers and visually check the condition of the brake disc and the thickness of the brake shoe lining. Also check the brake lines for leaks. Report any faulty conditions.

19. Rear tires

The operator should check the rear tires for bad cuts, separations, and embedded rocks. Report any of these problems to the supervisor.

20. Rear wheel lugs

The operator should check that the rear wheel lugs are hand tight. The rear wheel lugs hold the rear tires and rims in place. Report any loose lugs to the supervisor.

21. Rock strippers

The operator should check that the rock strippers are in place. The strippers are located between the two dual wheels, one on each set of duals.

22. Rear suspension

The operator should check the suspension cases for cracks. Check both the top and bottom eyes for cracks and check the condition of the pins.

23. Square roller

The operator should check to see if any of the four cap screws on the square roller are loose. The square roller assembly is located at the rear of the truck above the axle box. Also check that the retaining nut is secure. There should be no free space on either side of the square roller.

24. Rear axle box door

The operator must check that the rear axle box is not loose, open, or missing. If it is not properly sealed, air will escape through the door instead of going to the wheel motors to cool them. Seal the door by using the turnbuckles, or if you can't seal it report to the supervisor.

25. Dump body

The operator should visually check the dump body or box for cracks due either to wear or welding failure. Report any cracks to the supervisor. Also check the dump box supports and the hinge points. Look for cracks and possibly keeper bolts missing from the hinge pins.

26. Steering assembly

The operator should check the tie rod ends, pins and keepers, bell cranks, drag links, ball joints, steering rams and hydraulic hoses. Also check that all the joints are tight and have little play. The steering assembly is found under the front bumper of the truck. Report any faulty conditions to the supervisor. Never operate a truck with faulty or doubtful steering.

Note that some haulage trucks may have mechanical actuation of the steering valve as opposed to orbital actuation.

27. Radiator coolant level

The operator should check the radiator coolant level by removing the radiator cap. Exercise extreme caution when removing the cap: coolant is under pressure and is very hot. If the coolant level is low, report to the supervisor.

28. Hydraulic oil level

The operator should check the hydraulic oil level by opening the bottom pet cock located on the hydraulic tank. If the oil flows out, the level is okay. If the oil does not flow out, the level is too low and must be topped up.

29. Air intake

The operator should check the air intake located on the deck. This intake cools the wheel motors. Check the screen covering the intake for any paper or rags that are sucked up against it and are cutting off air to the wheel motors. Also, clear the intake area of rock, ore, or coal that could be pulled into the air intake.

30. Auxiliary steering

The operator should check the auxiliary steering motor and pump located on the right side of the truck on the main frame in the engine compartment:

a. Check the motor and pump bolts for tightness.

b. With the engine off, turn on the auxiliary steering switch and listen for the motor and pumps starting up.

c. Turn the steering wheel back and forth, and look out of the cab at the left front wheel. If the wheel moves, the auxiliary steering system is working.

d. If the wheel does not move, report right away to the supervisor.

Note:

Any truck that has automatic actuation of the auxiliary steering system must be checked by the operator as if it didn't have the automatic actuation. If a steering problem occurs the operator should not rely on the automatic system, but should activate the auxiliary steering system manually.

31. Air cleaner indicators

The operator should visually check the indicators for a green band, meaning that the filter is okay. If the red band shows, the filter element is sufficiently plugged to affect the performance of the engine. Report plugged filter elements to the supervisor; they should be changed as quickly as possible.

32. Hydraulic hose leaks

The operator should visually check the condition of the hydraulic hoses and look for leaks. Report major leaks as soon as possible to the supervisor. Do not operate a truck that has major leaks in the steering system.

33. Lights

The operator should turn on all the truck lights to see if they are working properly:

- Headlights
- Clearance lights
- Back up lights
- Brake lights
- Retarder light

Faulty lights should be replaced.

34. Glass

The operator should check that the windshield, windows and mirrors are clean and free of cracks.

35. Handrails and ladder

The operator should check the condition of the handrails and ladder and look for loose handrails or rungs. Report any problems.

36. Wheel chocks

The operator should ensure that the truck is equipped with two wheel chocks mounted in a readily accessible place.

37. Seat belts

An operator must check that the truck has seat belts. It is left up to the operator to use them or not.

38. Fire extinguisher

Every truck must be equipped with a fire extinguisher in good condition. Faulty fire extinguishers must be replaced immediately.

39. Dump body supports

The operator must check that the dump body supports are in place. The four supports are situated on the top of the main frame and cushion the dump body. Made of hard rubber with some give, they act as shock absorbers between the main frame and dump body. If any of the supports are missing, notify the supervisor.

40. Material in the dump body

The operator must check for left over material in the dump body. If any is found, ask the supervisor where to dispose of the material.

OBJECTIVE 4-4

The operator will perform proper engine start-up and shut down procedures.

KEYPOINTS/PROCEDURES

1. **Start up**

   Follow these procedures to start the engine:

   a. Turn on the master switch.

   b. Put on the maxi-brake.

   c. Set the range selector in neutral. (The engine will not start in any other position).

   d. Turn the engine stop button on.

   e. Check the air pressure. When the engine is cold it will require 120 psi of air pressure to start. If the engine is warm, it will start with as low as 70 psi.

   f. Press on the start air button and the engine will start.

2. **Shut down**

   Follow these procedures to shut down the engine:

   a. Put on the maxi-brake.

   b. Place the range selector lever in neutral.

   c. Idle the engine at least five minutes prior to shut down in order to allow the engine adequate time to cool.

   d. Hit the engine kill switch until the engine stops.

   e. When preparing to leave the cab, shut off all switches.

   f. Upon leaving the cab shut off the master switch.

   g. Block the truck with wheel chocks if it is to be left for any length of time.

OBJECTIVE 4-5

The operator will perform operational checks on the service brakes, steering, retarder and controls prior to putting the truck into production. The operator will also describe the acceptable conditions for each check and the problems that should be reported to the supervisor.

KEYPOINTS/PROCEDURES

1. **Service brakes**

   Air-over-hydraulic service brakes are used to stop the truck under 3 mph and in emergency conditions. To check these brakes, put the truck into forward, pick up speed to 3 mph and apply the brakes as hard as possible. If the truck comes to a sudden stop the brakes are in good condition. If the brakes do not adequately stop the truck, report to the supervisor. Do not operate a truck with faulty brakes.

2. **Steering**

   The operator must check the steering, to the right and to the left. The steering is full time power steering. If there are any indications of the steering free wheeling or of hard steering, report to the supervisor and do not operate the truck.

3. **Dynamic retarder**

   The operator should check the retarder every shift. First put the truck into forward on level ground. Gain speed to over 15 mph, then apply the retarder pedal fully and hold it until the truck slows to 3 mph. If the retarder pedal is working properly, it will slow the truck down very quickly. If it takes a long time, notify the supervisor and do not operate the truck.

4. **Park brake cut out**

   To check trucks equipped with a propulsion interlock switch that cuts-out propulsion when the park brake is applied:

   a. Place the hand or park brake on.

   b. Put the truck into forward.

   c. Under power try to move the truck forward. If the cut-out is working properly, the truck will not move. If the truck moves forward freely, report to the supervisor.

5. **Hoist lever**

   The operator should check the hoist of the dump body with the engine rpm right up. Pull the hoist lever to the raise position. If the box moves up and down with ease, the hoist is functioning properly. If the box rises slowly, report to the supervisor.

   To check trucks equipped with a hoist lever-shift selector interlock, leave the range selector lever in reverse, put on the park brake, then pull the dump lever into the dump position. If the range selector lever automatically goes into neutral, the interlock is working properly: if it doesn't, report immediately to the supervisor.

OBJECTIVE 4-6

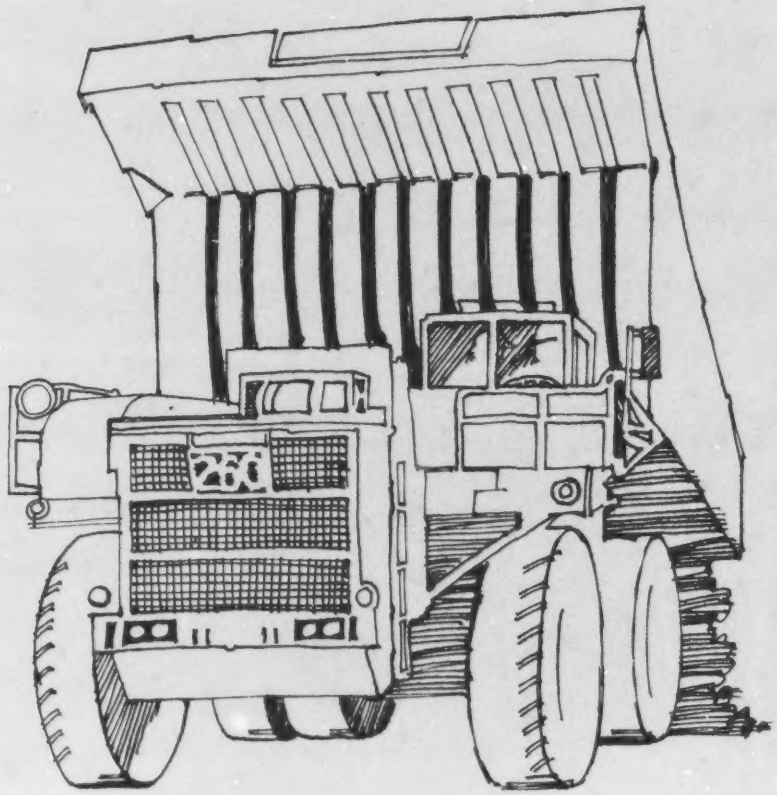
The operator will describe proper procedures for a cold weather start of the truck engine.

KEYPOINTS/PROCEDURES

1. Start-up procedures are given in OBJECTIVE 4-4.
2. The operator should let a cold engine idle until the engine temperature reaches 140°F and the oil pressure reaches 55-60 lbs. This will take anywhere from 20-30 minutes in cold weather.
3. Run the engine at high idle with the maxi-brakes on to warm it up quickly.

BASIC TRUCK OPERATION

module 5



OBJECTIVE 5-1

The operator will demonstrate moving the truck forward under normal operating conditions on a roadway, and slowly in close quarters.

KEYPOINTS/PROCEDURES

1. Follow these procedures to move the truck forward:
   a. Before moving the truck the operator should make sure that the air pressure is over 100 psi and that all other gauges show normal readings.
   b. Make sure that the high-low idle switch is in the high idle position.
   c. Put your left foot on the service brake pedal and press it down to hold the truck.
   d. Blow the horn so that people around the truck know it is going to move.
   e. Place the range selector lever in forward and the engine will automatically rev up to 1400 rpm.
   f. Release the hand brake and the maxi-brakes.
   g. Press down with your right foot on the accelerator pedal and at the same time let up on your left foot to release the service brakes. The truck will move forward.

2. **Slow movement**

   For slow forward motion the operator uses the same procedures as for normal forward motion except that the high-low idle switch should be in the low idle position. The low idle position gives a lower engine speed (650-750 rpm) for slow movement and precise maneouvering in close quarters such as the shop area, the service area, and the area around the fuel tanks.

   Note that the truck should never be operated under normal driving conditions with the switch in the low idle position.

   Caution:

   It is very important that the operator checks that it is safe to move the truck.

OBJECTIVE 5-2

The operator will demonstrate moving the truck in reverse on level and downgrade roadways and in blind areas requiring the use of mirrors on each side of the truck.

KEYPOINTS/PROCEDURES

1. Follow these procedures to reverse the truck:
   a. First bring the truck to a complete stop.
   b. Keep your left foot on the service brake pedal to keep the truck from moving.
   c. Place the range selector lever in reverse.
   d. Do not allow the engine to rev up into high idle unless the dynamic brake pedal is pushed down.
   e. Once the range selector lever is in reverse, press on the accelerator pedal and at the same time let up on the service brake pedal. The truck will move in reverse.
   f. When reversing downgrade, use the dynamic retarder in conjunction with the service brakes. The dynamic retarder works in reverse also.

Caution:

Because of the limited vision and blind areas with large haulage trucks, operators must learn how to use the mirror on each side of the truck.

OBJECTIVE 5-3

The operator will demonstrate proper turning procedures both on roadways and in close quarters.

KEYPOINTS/PROCEDURES

1. Turning a truck right or left is a very basic procedure once the truck is in motion. Simply turn the steering wheel in the desired direction.
2. **Tight turns**

   For tight turns in either direction:

   a. Reduce direction speed so that tire damage does not occur during the turn.

   b. Make turns as gradually as possible because a sharp turn may cause the inside wheel motor to stall.

   c. Avoid hitting rocks or holes which might cause damage to the steering system.
3. Do not turn the front wheels when the truck is stationary because it is very hard on the entire steering system.

OBJECTIVE 5-4

The operator will demonstrate the proper procedures for using the dynamic braking pedal and the air brake or service brake to slow down the truck.

KEYPOINTS/PROCEDURES

1. **Dynamic braking pedal**

   To slow down a truck that is already in motion, release the accelerator pedal and press down on the dynamic retarder pedal. The further this pedal is pressed the greater the braking action. The greatest braking action occurs when the truck is at 12 to 15 mph. Use the dynamic braking pedal on all speeds over 3 mph, and use the air brake or service brakes under 3 mph limit.

2. Using the air brakes when the truck is travelling over 3 mph will cause unwanted brake wear and damage. Proper use of the dynamic retarder will ensure that the air brakes are not used until the truck is at the 3 mph limit.

OBJECTIVE 5-5

The operator will demonstrate proper use of the auxiliary steering system in a simulated emergency situation.

KEYPOINTS/PROCEDURES

1. The auxiliary steering system is usually used in the case of an emergency.
2. **Auxiliary steering procedures**

   Follow these procedures to use the auxiliary steering:

   a. When a steering emergency occurs, the object is to bring the truck to a complete stop as quickly as possible.

   b. While the truck is coming to a stop, activate the auxiliary steering system. The pump will then start up and supply hydraulic pressure to the steering system.

   c. Keep the auxiliary steering switch on and steer the truck to a stop. Note that the wheels cannot be turned as quickly as normal when powered by the auxiliary steering pump.

   d. When the truck comes to a complete stop, turn off the auxiliary steering switch.

OBJECTIVE 5-6

The operator will demonstrate stopping the truck using proper braking techniques.

KEYPOINTS/PROCEDURES

1. **Stopping procedures**

   Follow these procedures as the final stage in bringing the truck to a complete stop:

   a. Once the truck speed is reduced by the dynamic retarder to the 3 mph range, gradually press down on the air brake pedal until the truck is completely stopped.

   b. At the same time hold the dynamic retarder pedal down. Simultaneous use of the retarder and brakes increases braking efficiency.

   c. Set the hand brake on and release both the air brake pedal and the retarder pedal.

   d. If the truck is going to be left for any length of time, release the hand brake, set the maxi-brakes and place the wheel chocks securely.

OBJECTIVE 5-7

The operator will demonstrate parking a truck safely.

KEYPOINTS/PROCEDURES

1. **Parking procedures**

When parking a truck either at the end of the shift or in an emergency where the truck will be left unattended, use the following procedures:

a. Park on the most level area as possible.

b. Park alongside a bank and turn the wheels into the bank to safeguard against a run away. In emergency parking, always try to turn the wheels into an embankment to prevent the truck from running away.

c. Set the maxi-brakes.

d. Turn off the engine, after letting it idle for a time so that it gradually cools down. However, in the case of an emergency shut off the engine immediately.

e. Shut off the master switch.

f. Set the wheel chocks in place, one under one of the front wheels and the other on the opposite side under one of the rear wheels.

Cautions:

If a truck has a mechanical or electrical problem and has to be left on a downgrade, ask the supervisor for additional wheel chocks so that the truck can be safely secured.

If a truck is to sit for any length of time, i.e., half an hour or more, shut off the engine to safeguard against damage while the truck is unmanned.

OBJECTIVE 5-8

The operator will demonstrate shutting down the engine and truck in a simulated emergency situation, and explain all the precautions to take.

KEYPOINTS/PROCEDURES

1. **Emergency shut down procedures**

   When an emergency shut down of the engine and truck is necessary:

   a. Bring the truck to a stop as quickly as possible.

   b. Park out of the way of any traffic on the most level area possible.

   c. Pull the hand brake and set the maxi-brakes.

   d. Pull the emergency shut down and at the same time hold the engine stop switch down until the engine stops.

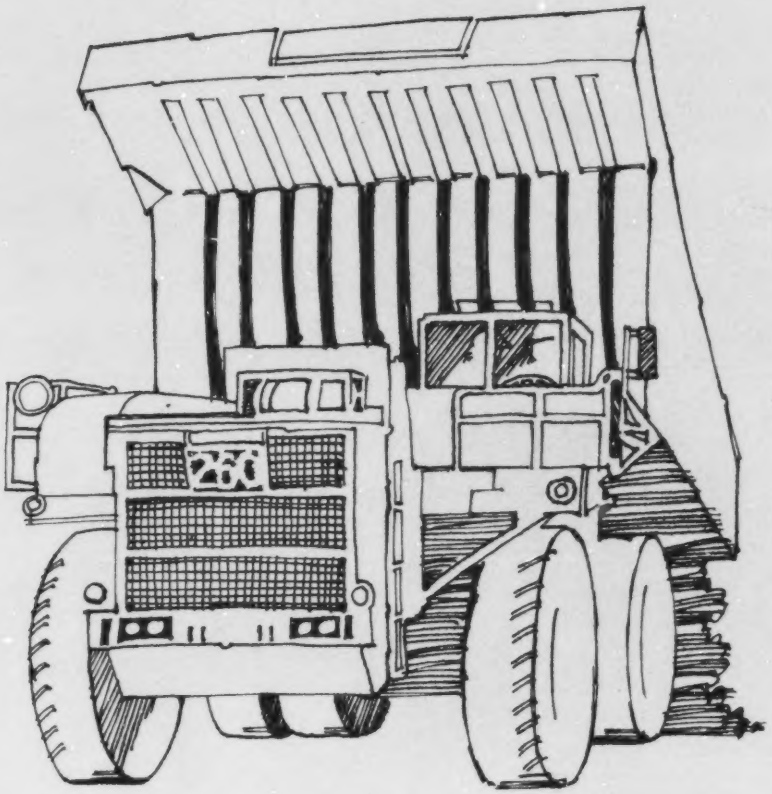
   e. Shut off the master switch.

   f. Set the wheel chocks and block the wheels.

   g. Inform the supervisor of the reasons for the emergency shut down and obtain any help that is necessary. In the case of a fire inform the supervisor immediately.

PRODUCTION OPERATION

module 6



OBJECTIVE 6-1

The operator will demonstrate positioning the truck for loading at the shovel and the loader on the shovel or loader side and on the operator's blind side.

KEYPOINTS/PROCEDURES

1. **Positioning of the truck for loading at the shovel**

   The shovel on the operator's side.

   The truck operator must be able to back into position on the side of the shovel that is most visible to the operator:

   a. When the shovel operator is waiting with the bucket loaded and spotted, back up by lining up the edge of the dump body or box with the dipper trip lever.

   b. Continue backing up until the shovel operator dumps the bucket or blows the horn to stop.

   c. When the truck stops, it should be at right angles to the shovel sticks.

   The shovel on the blind side.

   Blind side positioning is made when the truck backs in for a load and the shovel is on the opposite side of the truck to the operator's cab. Full view of the shovel while backing in is not possible, making the task difficult. Follow these procedures for blind side positioning:

   a. Prior to backing in under the bucket, the operator should note the basic layout of the working face and pay attention to all traffic systems. Be cautious when backing in on the blind side.

   b. If the shovel operator has the bucket filled and in position to dump, the operator should line the edge of the dump body or box with the shovel bucket teeth leaving about 18 inches of teeth showing over the edge of the dump body.

   c. Continue to back up slowly until the shovel operator either dumps the bucket or blows the horn to stop.

   d. When stopped in position, the truck dump body should be at right angles to the shovel sticks.

   The truck operator must stay alert to the fact that the shovel may have moved a distance sideways since the truck's last load.

   When the truck is being loaded, the truck operator should not leave the cab for any reason. The truck should be sitting as flat as possible and not be backed up onto rocks on the working face. Sitting flat minimizes tire damage, and also minimizes torsional strain on the nose cone, square roller and suspension system.

   Prompt and correct positioning of trucks for loading will cut down on the loading cycles and increase production.

2. **Positioning for loading at a loader**

   Follow these procedures to position the truck at the loader:

   a. Visually check the traffic control scheme in the work area of the loader.

   b. Position the truck beside the loader. This task is not as difficult as positioning at a shovel. The majority of the time the truck can be positioned so that the loader is on the operator's side of the truck.

c. Wait until the loader operator spots the loader before backing under the bucket.

d. When the loader is ready with a full bucket, back the truck in lining up the side of the dump body or box with the loader tilt arms.

e. Back in parallel to the loader's tires using caution at all times.

f. If the truck gets too close when backing in, the loader operator can compensate by backing up.

In nearly all cases, the loading should be done from the operator's side. If the loader has to load on the driver's blind side, the truck operator should use extra caution in positioning the truck.

Trucks are best spotted at about a 45 degree angle to the working face rather than at right angles to it. In this position the loader can swing some loads from the bank onto the truck with a minimal backward movement, thus increasing loading speed. It is the loader operator's responsibility to position the trucks for effective loading.

Caution:

When the truck is being loaded, the operator must not come out of the cab for any reason. Staying in the cab is necessary because of the constant danger of material falling out of the bucket and injuring the operator. The exception to this rule is when the truck is being loaded with boulders. In this case leave the cab and go to a safe position until the truck is completely loaded.

OBJECTIVE 6-2

The operator will demonstrate hauling a load on the level, and explain all procedures and precautions to take.

KEYPOINTS/PROCEDURES

1. **Hauling on the level**

   Hauling on level ground is basically governed by common sense. The operator should drive to road conditions, using the dynamic retarder to control the speed of the truck. Stay alert to possible road hazards at all times. To stop the truck, depress the dynamic retarder pedal fully until the speed of the truck is reduced to 3 mph. Then apply the service brakes until the truck comes to a complete stop.

2. **Overspeed braking**

   If the truck is driven over a set top speed, usually 25 mph, the overspeed brake is automatically fully engaged. Propulsion cutout will occur at approximately 2 mph before the overspeed brake comes on. The overspeed brake is actually the dynamic retarder. Once the truck speed falls back below the top speed set by the mine, the dynamic retarder automatically releases.

   Note:

   Do not operate the truck so that overspeed braking is continually recurring because this causes extensive damage to the electrical system.

OBJECTIVE 6-3

a. **The operator will demonstrate hauling a load downgrade. The operator will also explain all procedures and precautions for downgrade hauling including handling a runaway truck.**

b. **The operator will state the location of all emergency run off protection areas at the mine site, and demonstrate the use of these protection areas in a simulated emergency shut down.**

KEYPOINTS/PROCEDURES

1. Hauling material downgrade with large haulage trucks takes more concentration on speeds than does normal level grade hauling.

2. Large conventional haulage trucks are equipped with a transmission retarder whereas dynamic braking systems are used on diesel electric trucks.

3. When hauling downgrade, operators should keep a proper interval between trucks. This interval will vary depending on the speed, road grade and condition, but must always provide ample braking distance.

4. **Use of the retarder on downgrades**

   To slow or maintain the speed on a downgrade, the operator must release the throttle and depress the dynamic retarder pedal. The further the pedal is depressed the greater the retarding action. Note that retarder capabilities are directly related to speed, road, grade, and weight of loads.

   Always apply the retarder before going over the crest of any downgrade. There are two reasons for this precaution. First, it checks the operation of the retarder and should the retarder not be working the operator has time to stop the truck before taking it downgrade. The second reason is to give the operator control of the speed of the truck before it starts downgrade.

   To increase speed, the operator should relax the retarder pedal and the truck speed will increase.

   Caution:

   Do not allow the truck to exceed 15 mph on a downgrade. The retarder will begin to fade as the truck exceeds 15 mph and as the speed gets higher it will become less effective to the point of not having any retarding action at all. Maximum retardation results at 15 mph.

5. **Retarder failure**

   If the retarder fails while the truck is hauling a load downgrade, the operator should keep the retarder pedal depressed fully. There may be a chance that the retarder will start working again. At the same time, apply the service brakes fully and bring the truck to a stop as quickly as possible. Keep the service brake pedal completely down to the floor until the truck is stopped. Once the truck is stopped safely park it. Do not operate a truck with a faulty retarder.

   In the event of a retarder failure, the operator must act swiftly.The slower the operator is to act, the faster the truck will be going and the harder it will be to stop.

6. **Engine failure**

If for some reason the engine fails, the operator must immediately put the auxiliary steering switch on. Apply the service brake and retarder at the same time to bring the truck to a complete stop as quickly as possible. Then safely park the truck and report to the supervisor.

OBJECTIVE 6-4

The operator will demonstrate hauling a load up grade and explain all procedures and precautions to take.

KEYPOINTS/PROCEDURES

1. When hauling a load up grade, operators should maintain a minimum distance of 200 feet between trucks. When travelling loaded uphill, trucks should not pass one another. Follow all traffic rules.

Caution:

An operator should never stop on a ramp when loaded except for an emergency. When an emergency occurs on the haul ramp, use the truck radio to notify the proper authorities.

OBJECTIVE 6-5

The operator will demonstrate under slippery conditions hauling a load on the level, up grade and downgrade. The operator will also explain the procedures for driving under these conditions.

KEYPOINTS/PROCEDURES

1. **On the level**

   Use common sense when hauling on the level under slippery conditions. Keep speed to a minimum with the dynamic retarder. If the rear wheels lock up and start sliding while using the dynamic retarder release the retarder pedal to get the wheels rolling again.

   Caution:

   The operator must reduce speed and drive defensively under slippery conditions. Report any slippery conditions to the supervisor so that the road conditions can be improved.

2. **Up grade**

   When hauling up grade under slippery conditions the operator should increase the distance between trucks from the normal 200 feet to at least 400 feet. If the truck tires start to spin while hauling up grade, bring the truck to a stop as quickly as possible. Then safely block it. Notify all other trucks using the road that the slippery conditions exist and that there is a truck stopped on the up grade. Do not move the truck (either up or down) until the traffic is stopped by the supervisor and equipment is brought in to improve the road condition. Use extreme caution when moving equipment on slippery roads.

3. **Downgrade**

   Speed is the most important factor when hauling downgrade under slippery conditions. Keep the speed to a minimum when approaching the downgrade and test the dynamic retarder to see if it is operational. Be sure that when the truck brakes over the crest of the downgrade, the speed is minimal. Use extreme caution at all times while hauling downgrade under slippery conditions.

   Increase the distance between trucks travelling downgrade from the normal 200 feet to at least 400 feet. Use the retarder to control the speed of the truck. Under slippery conditions, the retarder when applied may lock up the rear wheels causing the back of the truck to slide. If this happens release the retarder pedal to get the wheels rolling again. The truck speed will increase rapidly so that you must apply the dynamic retarder pedal again to control the speed. You may have to use the retarder intermittently in this way.

   Speed is important on a downgrade because if the truck exceeds the 15 mph limit, the retarder starts to lose its effectiveness and the truck will continue to gain speed. Once the truck speed exceeds the speed limit set by the company, the overspeed braking will engage and because of the slippery conditions the rear wheels will lock up and cause sliding.

   Caution:

   If the road becomes slippery, the operator should notify the supervisor so that the road can be brought back to good travelling conditions.

OBJECTIVE 6-6

The operator will describe various conditions that may occur on an approach to the dump and will demonstrate a safe approach to the dump.

KEYPOINTS/PROCEDURES

1. When approaching the dump area, the operator should visually inspect the area for tire hazards and cracks that result from settling. Look at the height and width of the berms. If the height or width is inadequate, do no back up against the berm. Dump on top instead.
2. The operator must always follow the traffic control scheme unless notified otherwise by the supervisor.
3. The operator should check to make sure that there is a gradual incline from the inside of the dump to the outside. The truck should always back up grade to the outside edge of the dump.
4. The operator must use extreme caution while in the dump area. Do not proceed to dump past any cracks on the dump until the crack has been looked at by the supervisor. If in doubt, dump to the inside of a crack. Always be alert to where the dump supervisor is and drive with caution when near other equipment working the dump area.
5. Extra caution is necessary when dealing with coal stockpiles because of the softness of coal. Stay away from the edges of the stockpiles: dump on top.

OBJECTIVE 6-7

The operator will demonstrate backing up to the berm and dumping a load, and will explain the procedures and precautions for dumping at the berm.

KEYPOINTS/PROCEDURES

1. Never dump over a berm without having a dump supervisor present. If no dump supervisor is present, dump the load on top of the dump as stated in Rule 272 of the *Mines Regulation Act* and rule 203 of the *Coal Mines Regulation Act*. See OBJECTIVE 1-1.
2. To prepare for dumping:
   a. Once you have made the usual check of the dump and are ready to back up to the berm, back up the truck following the directions and signals given by the dump supervisor.
   b. When the truck is backed into the place designated by the supervisor the signal is given to the operator to dump the load.
3. To raise the box:
   a. Place the hand brake on.
   b. Set the range selector lever in neutral.
   c. Pull the dump lever back into raise and rev the engine to 1600 rpm. The box should raise and at the same time dump the load.
   d. Once the box goes "over centre", ease off the accelerator pedal to prevent unnecessary stress on the hoist cylinders.
   e. When the box is in the raised position (allowing complete dumping) put the dump lever in the hold position. Never hold the dump lever in the raised position otherwise you could damage the hydraulic system. The rate at which the dump body rises is directly related to the engine speed and the weight of the load.
4. To lower the box:
   a. Once the material has cleared the box, place the dump lever into the lower position, then rev the engine to 1600 rmp. The box will lower.
   b. When the box is about 2 feet from the bottom, release the accelerator and let the box lower gently into place on the frame.
   c. The dump lever should automatically return to the float position. If it does not, manually place the dump lever into the float position. If this is not done, the hydraulic oil will overheat because of the continuous operation of the pump and will cause problems in the steering and dumping mechanisms.
5. To leave the area:
   a. Once the box is down and you are ready to leave, wait for the dump supervisor to give the signal to leave.

OBJECTIVE 6-8

The operator will demonstrate positioning the truck at the crusher and dumping the load. The operator will also explain procedures and precautions for dumping at the crusher.

KEYPOINTS/PROCEDURES

1. Watch the signal lights at the crusher or breaker station for dumping directions.

2. When dumping into a bin or hopper at either a crusher or breaker station, back in square to an abutment or stop and follow the raising, dumping and lowering procedures given in OBJECTIVE 6-7, points 3 and 4.

OBJECTIVE 6-9

The operator will demonstrate following all the mine site's traffic control scheme rules.

KEYPOINTS/PROCEDURES

1. Traffic control scheme rules are outlined in OBJECTIVE 1-3.

OBJECTIVE 6-10

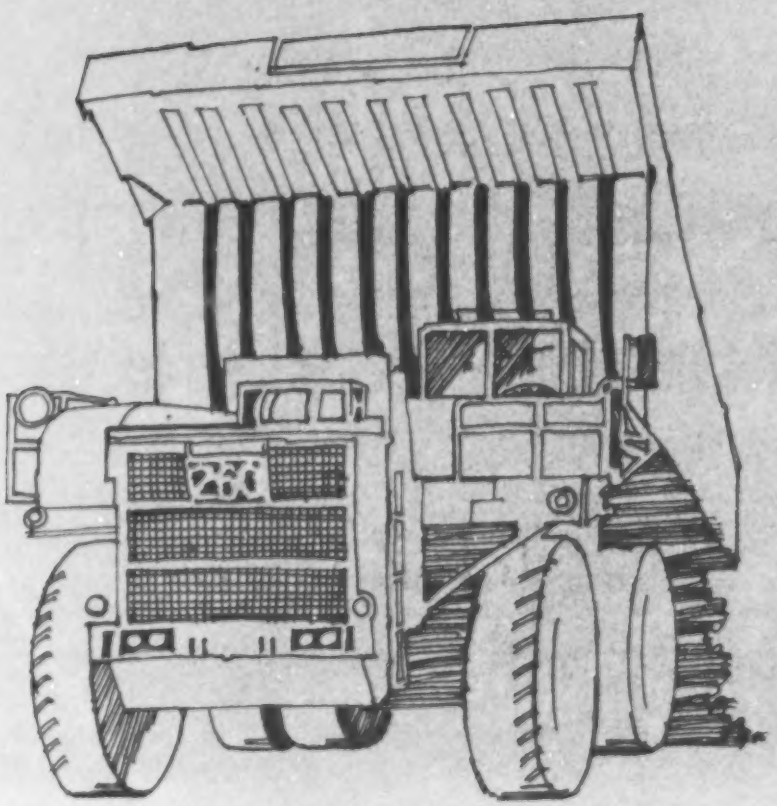
The operator will demonstrate following safe driving practices in order to avoid tire damage.

KEYPOINTS/PROCEDURES

1. Ways to avoid tire damage are outlined in OBJECTIVE 1-4.

SERVICE AND REFUEL

module 7



OBJECTIVE 7-1

The operator will demonstrate safely entering the lube and oil house area and explain all precautions to take.

KEYPOINTS/PROCEDURES

1. The operator, when entering the lube and oil house area, must put the high-low idle switch into the low idle position in order to maintain low engine rpms. Enter the lube and oil area at less than the posted speeds using **extreme caution**. Become familiar with the layout of the various lube and oil areas. The key to safety in lube and oil areas is to travel very slowly.
2. Prior to servicing, the operator must set the hand and maxi-brakes, then climb down to ground level.
3. Once on the ground, the operator should set the wheel chocks into position.

OBJECTIVE 7-2

The operator will demonstrate following all procedures for having the truck refueled by a fuel truck and explain all precautions to take.

KEYPOINTS/PROCEDURES

1. Follow these procedures for refuelling at a fuel truck:
   a. When approaching a fuel truck for fuel, put the high-low idle switch into low idle and come alongside the fuel truck at low speed.
   b. The fuel truck should be on your side of the truck so that you can keep it in full view at all times.
   c. Once the fuel truck driver has spotted the truck, stop the truck, shut down the engine, and set the maxi-brakes.
   d. Get out of the cab and stay on the ground during the fuelling.
   e. Once on the ground you or a service person must set the wheel chocks in place.
   f. Before reboarding after the refuelling, walk around the truck to make sure that no one is close to or under it and that the wheel chocks have been removed and stored properly.
   g. When sure that the way is clear, signal by a blast of the truck horn before releasing the brakes to indicate that you are leaving. It is important to wait momentarily before leaving.
   h. Place the high-low idle switch into the high idle position and leave the area at a low speed.

Caution:

Refuelling by a fuel truck is an operation that is always carried out in a pit situation. Therefore, be aware of traffic and everything around the truck and proceed cautiously.

OBJECTIVE 7-3

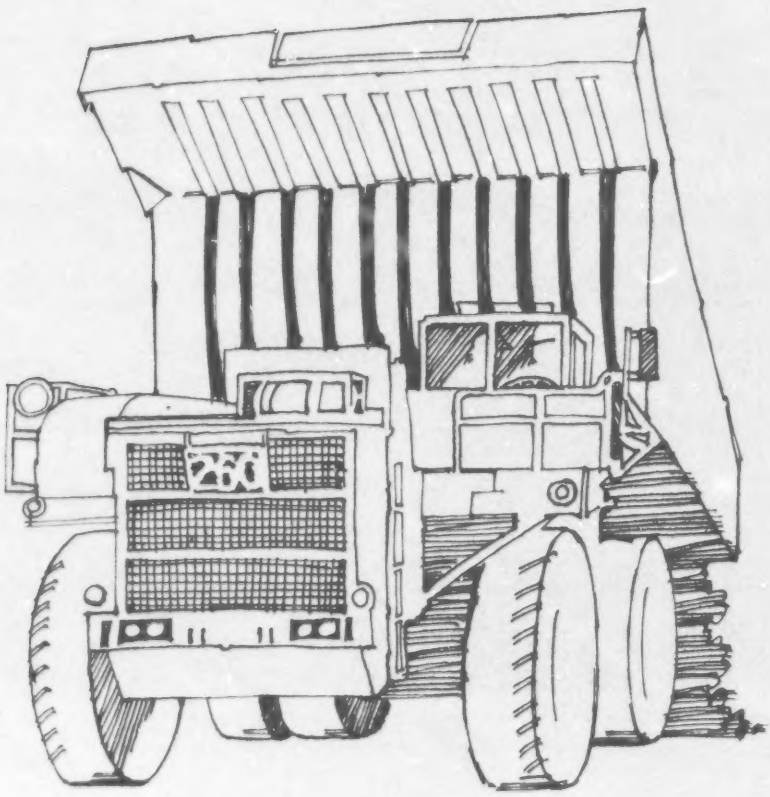
The operator will demonstrate good housekeeping on the truck and in the fuel and service areas.

KEYPOINTS/PROCEDURES

1. Whenever possible, the operator should clean up the service area while the truck is being serviced.
2. Continually clean up old rags, and paper, etc. because the refuel site usually changes daily in accordance with the pit situation. Put the refuse into a barrel for disposal.
3. Clean up oil spills on the floor as soon as possible. Eliminate all possible hazards that may cause slips and falls.

SPECIAL ASSIGNMENTS

module 8



OBJECTIVE 8-1

Module eight is for special assignments covering individual property specialty objectives. These objectives are not normally performed with a haulage truck, but are relative to operation on certain properties. Individual properties should detail their specialty objectives in this module.

Province of
British Columbia

OPEN PIT MINING JO
HAULAGE TRUC
SKILL PROF

BASIC SAFETY AND OPERATING RULES	EXPLAIN THE IMPORTANCE OF SAFETY AND OPERATING RULES	EXPLAIN THE IMPORTANCE OF STAYING ALERT TO CHANGING CONDITIONS	EXPLAIN THE COMPANY TRAFFIC CONTROL SCHEME	EXPLAIN HOW TO AVOID TIRE DAMAGE	EXPLAIN NORMAL AND EMERGENCY BRAKING TECHNIQUES	EX E PR
	EXPLAIN THE COMPANY'S LOCK-OUT PROCEDURE					
COMMUNICATIONS	SEND AND RECEIVE SIGNALS	FILL OUT REPORT FORMS	OPERATE A MOBILE RADIO			
GAUGES AND CONTROLS	LOCATE AND IDENTIFY GAUGES AND CONTROLS	DESCRIBE THE FUNCTION AND RANGE OF EACH GAUGE AND STATE WHICH COMPONENTS IT IS RELATED TO	DESCRIBE THE FUNCTION OF EACH CONTROL AND STATE WHICH COMPONENTS IT IS RELATED TO	DESCRIBE WARNING SIGNALS AND EXPLAIN THE ACTION TO TAKE FOR EACH SIGNAL		
PRE-START AND OPERATIONAL CHECKS	LOCATE AND IDENTIFY BASIC UNITS AND RELATED COMPONENTS	LOCATE IN SEQUENCE THE PRE-START AND OPERATIONAL CHECK POINTS	PERFORM ALL PRE-START CHECKS	PERFORM ENGINE START-UP AND SHUTDOWN PROCEDURES	PERFORM OPERATIONAL CHECKS	CC
BASIC TRUCK OPERATION	MOVE THE TRUCK FORWARD	REVERSE THE TRUCK	TURN THE TRUCK	SLOW DOWN THE TRUCK	USE THE AUXILIARY STEERING	STC
PRODUCTION OPERATION	POSITION THE TRUCK FOR LOADING	HAUL A LOAD ON THE LEVEL	HAUL A LOAD DOWN-GRADE	HAUL A LOAD UP-GRADE	HAUL A LOAD UNDER SLIPPERY CONDITIONS	CON DUM
SERVICE AND REFUEL	ENTER THE LUBE AND OIL HOUSE AREA	REFUEL THE TRUCK	PRACTISE GOOD HOUSEKEEPING			
SPECIAL ASSIGNMENTS	PERFORM SPECIALTY OBJECTIVES SET BY THE INDIVIDUAL PROPERTIES					

OB TRAINING SERIES
JCK OPERATOR
)FILE CHART

Developed by:
Research and Curriculum Development Branch
Post-Secondary Department
Ministry of Education
1982

EXPLAIN TRUCK EMERGENCY STEERING PROCEDURES	EXPLAIN TRUCK AND ENGINE EMERGENCY SHUTDOWN PROCEDURES	EXPLAIN THE IMPORTANCE OF GOOD HOUSEKEEPING	EXPLAIN COMPANY BLASTING AND GUARDING PROCEDURES	DESCRIBE THE BASIC LAYOUT OF THE PIT AREA	EXPLAIN THE IMPORTANCE OF REPORTING ACCIDENTS AND INJURIES	EXPLAIN THE COMPANY'S POWER CABLE HANDLING POLICY
PERFORM A COLD WEATHER START						
STOP THE TRUCK	PARK THE TRUCK	PERFORM AN ENGINE AND TRUCK EMERGENCY SHUTDOWN				
READ THE CONDITION OF THE DUMP ON APPROACH	BACK UP TO THE BERM AND DUMP THE LOAD	POSITION THE TRUCK AT THE CRUSHER AND DUMP THE LOAD	FOLLOW THE TRAFFIC CONTROL SCHEME	DRIVE CAREFULLY TO AVOID TIRE DAMAGE		

THE DACUM APPROACH

DACUM is a systematic model of program development used in designing career, technical and vocational training programs. The first step in the process is to establish the skills expected of a graduate entering employment. These skills are generally specified by a representative employer group in a workshop conducted by program development specialists. The product of this activity is a skill profile chart. This chart is then circulated both to the participants and to a number of other employers for review prior to further development.

The next step is to specify learner-centred performance objectives. These include not only the skills a learner must demonstrate but also the conditions under which the skill is to be performed and the criteria used to determine the acceptable standard of performance.

Once the performance objectives have been set. there are three important steps to complete the development process. These are generally undertaken by an instructor or group of instructors. in the following order:

1) Appropriate evaluation instruments are chosen or created to assess student capability in relation to the specific objectives of the program.

2) A variety of suitable instructional techniques and learning experiences are chosen to facilitate learning of the skills and knowledge required to meet the objectives.

3) Instructional resources (texts. films. models. and other learning aids) are selected or created.

READING THE SKILL PROFILE CHART

A skill profile chart (often referred to as a DACUM Chart), is a graphic representation of the essential skills expected of a student graduating from a specific career, vocational or technical program.

Broad areas of employee responsibility are shown in the boxes on the left of the chart. These are called "general areas of competence". The tasks or skills related to each are sequenced along the horizontal track to the right of the general area of competence.

FOR FURTHER INFORMATION

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